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MINN. DEPT. OF EDUCATION

PLANS FOR VOCATIONAL
EDUCATION IN MINN.

ST. PAUL



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Minnesota, State board for
vocational education.

STATE OF MINNESOTA

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Department
of
Education

Plans for
Vocational Education
in
Minnesota



State Department of Education
State Historical Society Building
St. Paul, Minnesota
1919

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**BULLETINS PUBLISHED BY THE
DEPARTMENT OF EDUCATION RE-
LATING TO ORGANIZATION AND
STANDARDS:**

Rural Schools.

Consolidated Schools.

High and Graded Schools.

Teacher Training Departments.

Vocational Education.

Special Classes for Defectives.

Buildings and Sanitation.

School Libraries.

Re-education of Injured Persons.

Qualifications and Certification of Teachers
for Graded and High Schools.

Qualifications and Certification of Teachers
for Rural Schools.

I. ADMINISTRATION AND SUPERVISION.

1. The general administration of Vocational Education shall be cared for by a State Director of Vocational Education. He shall be appointed by the State Board, which Board shall fix his term of service and remuneration and give general directions for his conduct of the work. His salary and traveling expenses shall be paid from State funds.
2. Agricultural education shall be supervised by a person appointed by the State Board, which Board shall fix the term of service and remuneration of such supervisor. The Supervisor of Agriculture shall give his full time to the work under the immediate direction of the State Director. His salary shall be paid one-half from State funds and one-half from Federal funds available for the training of agricultural teachers, provided that the amount of federal funds so used shall not exceed twenty-five per cent of the amount available for the training of agricultural teachers. His expenses for travel, printing and clerical help may be paid one-half from State funds and one-half from Federal funds available for the training of teachers of agriculture.
3. Industrial education shall be supervised by a person appointed by the State Board, which Board shall fix the term of service and remuneration of such supervisor. The Supervisor of Industrial Education shall serve under the immediate direction of the State Director and, for the year 1919-20 shall also act in the capacity of itinerant trainer of trade and industrial teachers and shall co-operate in the work of recruiting and organizing classes for the training of trade and industrial teachers. He shall give his full time to the work. His salary, traveling expenses, clerical help and printing shall be paid one-half from State funds and one-half from Fed-

eral funds available for the training of trade and industrial teachers, provided that the amount of Federal funds so used shall not exceed twenty-five per cent of the amount available for the training of trade and industrial teachers.

4. Home economics education shall be supervised by a person appointed by the State Board, which Board shall fix the term of service and remuneration of such supervisor. The Supervisor of Home Economics Education shall serve under the immediate direction of the State Director. The salary, traveling expenses, clerical help and printing of such supervisor shall be paid one-half from State funds and one-half from Federal funds available for the training of Home Economics teachers, provided that the amount of Federal funds so used shall not exceed twenty-five per cent of the amount available for the training of Home Economics teachers.
5. The supervision of the training of vocational teachers shall be cared for by the State Director and his supervisors.

Qualifications of State Supervisors.

- A. The Supervisor of Agricultural Education shall have completed the prescribed course in the University of Minnesota for teachers of agriculture, or of another institution of equal rank, and have had at least three years of practical farm experience after the age of fourteen, shall have had at least three years of successful experience teaching agriculture of less than college grade, and shall be chosen with due regard for general fitness.
- B. The Supervisor of Industrial Education shall be a graduate of the University of Minnesota, or of another institution of equal rank, shall possess both technical training and adequate shop experience and shall be chosen with reference to general fitness.

- C. The Supervisor of Home Economics Education shall be a graduate of the Home Economics Department of the University of Minnesota or of an institution of equal rank, shall have professional training in general education and special methods of presenting the subject of home economics, shall have had successful teaching experience, shall have had at least three years of practical experience, and shall be chosen with reference to general fitness.

II. GENERAL CONDITIONS.

1. All schools receiving aid must be under public supervision and control.
2. The controlling purpose must be to fit pupils for useful employment.
3. The courses offered must be of less than college grade.
4. The courses shall be arranged to provide for the needs of pupils over fourteen years of age.
5. Every dollar of Federal aid must be matched by a dollar of State or local money, or both.
6. Federal money shall be expended only for:
 - A. Salaries of teachers, supervisors and directors of agriculture.
 - B. Salaries of supervisors and teachers of trade, home economics and industrial subjects.
 - C. Maintenance of teacher training for vocational teachers.

Note: No Federal money may be used for the purchase, erection, preservation, or repair of any building, for equipment, or for the purchase or rental of lands.

III. AGRICULTURAL EDUCATION

1. Kinds of schools.
 - A. State schools of agriculture of secondary grade operating under the control of the University of Minnesota; provided only that Federal aid to

such schools must be used to promote and extend the work and not to lessen the expense of maintenance.

B. State high schools or graded schools having a high school department located in the midst of farming communities and showing an enrollment of pupils from farm homes equal to at least one-fourth ($\frac{1}{4}$) of their total high school enrollment, or at least fifteen boys living on the farm who wish to take the work in vocational agriculture. For the year 1919-20 the number of high schools shall not exceed forty.

C. Part-time schools or classes.

- a. The purpose shall be to provide skilled instruction and supervision of practical farm work for persons beyond the average school age who are already engaged in farming on a productive basis.
- b. Admission shall be confined to persons over sixteen years of age.
- c. Courses may be maintained for Federal aid only in schools that are supporting full-time courses under the requirements of the State High School Board.
- d. The same plant and equipment used for the full-time courses may be used for the part-time courses, except that an additional room must be set apart as a recitation and study room for this group of pupils and additional instruction must be provided.
- e. Teachers shall be especially licensed and qualified for this work as provided for under Rule b, 2, page 13.
- f. Provision shall also be made for six months of supervised pro-

ject work for part-time pupils to be supervised by the full-time instructor in agriculture.

- g. The subject matter may be chosen from that already provided for the full-time course. It shall be adapted to the length of the courses and the needs of the individuals enrolled in them.
- h. The length of these courses, the time of year when they shall be given, the number of days per week and the number of hours per day shall all be determined locally and in accordance with the necessities of the persons attending them, provided only that these courses shall be maintained for at least 144 clock hours. The chief consideration is to bring within the reach of actual young farmers the advantages of skilled instruction and direction in the art of efficient farming. Successful institute conductors will be found to make satisfactory instructors for these part-time courses.

D. Evening Instruction.

- a. The purpose of this instruction and the qualifications for admission shall be the same as for the part-time classes.
- b. The same plant and equipment used for the full-time courses may be used, or classes may be held in rural schoolhouses readily accessible from the central school.
- c. The interests of the class shall be considered when determining subjects of study, but unit courses having the equivalent of five or more one and one-half hour lessons shall be provided.

- d. An evening session shall be at least one and one-half hours in length, and consist of actual class and laboratory work.
- e. The number of evenings per week and the time of the year when they shall be given, shall be determined locally and in accordance with the necessities of the persons attending them.
- f. Provision shall be made for six months of applied work for each member of the class, to be supervised by the full-time instructor from the central school.
- g. In case a teacher other than the regular teacher conducts this work, he shall be specially licensed and qualified, as provided under Rule b, page 13.

2. Plant and equipment.

- A. The minimum floor space shall be fifteen hundred (1500) square feet, preferably divided into at least three rooms as follows: (1) laboratory, (2) recitation, and (3) store room.

The laboratory shall be equipped with physical, chemical, biological and agricultural apparatus necessary for successful laboratory work in agriculture.

In addition, a farm machinery room shall be provided with machinery now in common use in practical farming in each locality, or a definite agreement shall be entered into with a local hardware dealer for the use of machinery as needed.

The store room shall be provided with suitable shelving and cabinets for the safe and convenient storing of products and collections for class and laboratory study.

B. The space allotted to agriculture shall meet the present requirements of the State High School Board as to (1) heating, (2) lighting, (3) ventilation, (4) ceiling height, (5) toilet lavatory.

C. An approved library, consisting of reference books, classified bulletins, farm journals, etc., in quantity sufficient for profitable study in lines especially adapted for vocational agriculture.

3. Minimum for maintenance.

A. In order to qualify for Federal aid a school must certify to an expenditure of at least \$1,700 for its department of agriculture.

B. An annual fund of not less than \$100 shall be available to the superintendent at all times for the addition of apparatus and supplies, agricultural books, magazines, express on slides, charts, etc., as needed. This does not include permanent fixtures, such as tables, sinks, chairs, book cases, etc.

4. Courses of study.

a. Minimum length of courses shall be two years, each containing at least six months of classroom and school instruction and each providing for at least six months of supervised practice in agriculture either on a farm provided by the school or other farm,.

b. Approximate minimum technical subject matter of courses: Field Crops, Animal Husbandry, Dairying, Farm Accounts and Farm Management, Soils, Horticulture and Farm Mechanics.

c. The courses shall include provision for instruction in English and citizenship and such co-ordinating courses as elementary science, mathematics, farm economics and industrial history.

- d. The time shall be divided approximately as follows: At least fifty per cent to strictly agricultural subjects and project work under supervision; thirty to thirty-five per cent to related subjects; fifteen to twenty per cent to academic subjects.
 - e. Each school shall emphasize instruction and project work in that field of agriculture most common and most profitable in its particular locality.
5. Methods of instruction.
- a. Except in part-time courses, the teacher of agriculture shall be employed for the calendar year of twelve months.
 - b. The courses shall be worked out through class instruction based upon textbooks, reference books, bulletins, reports and lectures by the teacher.
 - c. Laboratory work consisting of simple but definite tests, demonstrations and experiments, all directed toward supplementing and making concrete the classroom instruction, shall be employed throughout the courses.
6. Qualifications of teachers.
- a. Full-time teachers.

All persons qualifying as full-time teachers of agriculture shall have completed the prescribed courses in the University of Minnesota for teachers of agriculture or in other institutions of equal rank. No person shall be qualified as a full-time teacher of agriculture in any school receiving Federal aid until he has completed fifteen hours of professional work in accordance with the requirements in Minnesota for the professional training of all high school teachers, nor until such person shall have been licensed to teach in a school for which Federal aid is granted. such license to be issued by

the State Department of Education. No license shall be issued for this purpose until the adequacy of the applicant's previous vocational experience and contact, covering at least two years, has been approved by the State Board and has, by this Board, been certified to the State Department of Education.

b. Part-time teachers.

The minimum requirement shall be the completion of a four year high school course, or its equivalent, exceptional skill in the practice of farming on a useful and productive basis, proven skill in imparting knowledge to others and good standing as a farmer and citizen.

Part-time teachers shall be licensed in the same manner as full-time teachers of agriculture, but no license for this purpose shall be valid for more than one year.

7. Qualifications of Supervisors of Agriculture.
(See page 6.)

8. Plans for six months' supervised practical work.

- a. This work shall include not only actual manipulation by pupils but also a study of local farm problems and operations under the immediate supervision and direction of the teacher.
- b. All instruction should, if possible, be verified by concrete reference to actual farm results, or by well authenticated experiments.
- c. Each pupil shall be required to carry out, during each year of his course, and in a commercially productive manner, one or more independent agricultural projects, supervised by the teacher in agriculture. This work shall cover at least six months

for each year of the course. Each pupil shall keep a complete and orderly record of the development and results of his projects.

- d. By project work in Minnesota we mean the application under the farm and home conditions of the pupil of as many of the facts and principles studied in class as the various home conditions will permit. Obviously, no two home conditions present the same problems.

The project work for credit during any season bears a close relation to the formal and organized instruction. This does not infer that the pupil will not be engaged, encouraged, and given some credit by his instructor in all his activities on the farm. In fact, farming generally in this State is a diversified business. Observation leads us to believe, however, that if nothing definite is undertaken for which the pupil is to be responsible under the guidance of the instructor, the instruction spreads out so thin as to make the result questionable. At least three instructional visits are made per month to each pupil during the farming season.

Project Work

Pupils taking field crops are required to select, with the advice and assistance of the instructor, a major project in field crops. The major project is chosen from one of the important economic crops grown in the community. For illustration, let us suppose that corn is selected. The parent or employer must agree to let the pupil be responsible for the management of all or a portion of this crop. Under the direction of the instructor, the pupil gathers and stores the seed, prepares the soil, plants the seed, cultivates and harvests the crop, and keeps a record of the cost of the various items entering into the production of the crop. When the boy has finished his project, he

should have carried out in practice the best methods known for the economic production of corn under the conditions presented by the farm on which he works.

In addition to the major project, the instructor will have the pupil do just as much work with the other farm crops as conditions will permit. Certainly the pupil should treat the grains for smut, the potatoes for scab, etc. A record will be kept showing the cost of preparation of the soil for grain crops as compared with corn or potatoes. A record will be kept showing the cost of harvesting, the cost of threshing, the yield and the value per acre of the grain crops. The hay unit will be likewise treated. In the fall, a summary of all field crops produced on the farm will be made as a preparation for the work in Animal Husbandry the second year.

In Animal Husbandry work with swine, dairy cows, beef cattle, sheep, horses, bees or chickens, may be selected for a major project. In case a swine project is selected, the pupil must be responsible for the care, feeding and management of at least a litter of pigs, and it is better still if he can manage all the swine on the farm. His project begins with the care of the brood sows and continues through the summer until the pigs are fattened in the fall. So far as possible the boy will put in practice the pasturage system and fattening system as advised by the agricultural experiment station of Minnesota. Records, of course, will be kept. When the pupil finishes his project he will have put into practice the best approved method of producing pork. In addition to his major project, the pupil will be required to do as much work with the other livestock on the farm as conditions will permit. The project work at no time will be permitted by the instructor to seriously interfere with the general conduct of the farm.

The third year's work consists of Soils and Horticulture. Projects in soils may consist of laying out a drainage system and installing tile, laying out crop rotation for the

farm, fertilizer tests and soil preparation tests. Horticulture projects consist of such things as laying out and planting an orchard or small fruit garden, rejuvenation of an old orchard, spraying, pruning and harvesting the crop of an orchard for a season. In some communities the horticulture course may be given over quite largely to vegetable gardening. In cases of this kind the project consists of growing a general garden, keeping records and marketing or preserving for home uses all the produce and canning that portion which would otherwise go to waste.

The fourth year's work is a sort of cap sheaf. An account of all the farm activities will be kept from the beginning of the school year, in connection with the formal study of farm accounts instruction. The farm management instruction will be applied to the conditions of each individual farm. Each pupil must make a map of the home farm or some other real farm, and then re-map the farm, showing the proper arrangement of fields, buildings, barnyards and roads. The map will also indicate the proper amount of stock and the proper rotation for the farm. Farm Mechanics shall include work in the care and repair of farm machinery and implements, records on the first cost and comparison of annual depreciation when properly housed and when poorly housed. Fence building, laying cement floors, construction of farm buildings, making self-feeders, hoppers, gates, poultry coops and hog houses may be considered as project or practical work in connection with farm mechanics.

9. Use of Federal funds for instruction in agriculture.

Of the Federal money available for any year for the salaries of teachers, supervisors, and directors of agriculture, not more than one-fifth of the total may be used for the salaries of part-time teachers; not more than one-tenth shall be used for the salaries of supervisors and directors of agriculture;

and not more than \$3,600 shall be distributed to the three state schools of agriculture unless the number of high schools qualifying does not use up the funds available and the expenditures of each individual school would justify greater reimbursement from Federal funds. The distribution of the aid among the three schools will be in proportion to the number of pupils engaged in practical work. Within these limits the distribution shall be prorated on the basis of the salaries paid by the various schools for instruction in vocational agriculture. Federal funds shall be distributed at the same time and through the same agencies as those at present employed for the distribution of special State aid to schools.

IV. TRADE, HOME ECONOMICS AND INDUSTRIAL EDUCATION.

1. The following is a tentative budget of Federal funds for the school year 1919-20 for instruction in trade, home economics, and industrial subjects:

- A. For evening schools or classes, 15%.
- B. For part-time schools or classes, 40%.
- C. For unit trade schools or classes, 10%.
- D. For general industrial schools or classes in cities of less than 25,000 population, 15%.
- E. For home economics, 20%.

2. **TRADE AND INDUSTRIAL EDUCATION.**

- A. It is the intention, for the school year 1919-20, to distribute Federal aid for the following named forms of trade and industrial work:

- a. Evening industrial schools or classes.
- b. Part-time schools or classes.
 - (1) Trade extension part-time schools or classes.
 - (2) Trade preparatory part-time schools or classes.
 - (3) General continuation part-time schools or classes.

- (a) Commercial classes.
- (b) Junior nurses classes.
- (c) Retail selling classes.
- c. Unit-trade schools or classes.
- d. General industrial day schools in cities of less than 25,000 population.

B. EVENING INDUSTRIAL SCHOOLS OR CLASSES.

- a. The controlling purpose shall be to extend the trade knowledge and skill of persons employed in trades and industries. This is further set forth under Methods of Instruction.
- b. The enrollment shall be limited to persons employed in trades and industries and over sixteen years of age.
- c. The plant and equipment shall be such as to furnish adequate space and facility for conducting the kind and amount of instruction undertaken. Day school facilities may be used for evening schools or classes, provided such arrangement is not allowed to interfere with the successful conduct of the evening school work.
- d. The expenditure for maintenance shall be sufficient to satisfy the State Board that the school will secure competent teachers and maintain a high degree of efficiency.
- e. The subject matter and instruction shall be of such a character as to supplement the day employment. Only such subjects shall be taught as will tend to increase skill or knowledge in the occupation in which the worker is engaged, or such as will lead to promotion or advancement in that occupation.

The instruction in evening schools and classes is limited to the trade-extension type and the character of the work must be such as to supplement the daily occupations of the group being trained. The work may be either manipulative or technical in nature.

The courses outlined should be made up of short-units. The short-units may consist of five or more lessons designed to give specific information on some phase of a trade or occupation. These short-units can be combined into a course covering one hundred lessons or more and extending through one or more years. Evening classes are usually held two or four nights a week from 7:30 to 9:30.

The pupils attending evening classes are more mature than those attending part-time or all-day industrial classes; therefore, the courses of instruction must be outlined to meet the needs of the older group. The students come from various occupations and attend evening classes to gain information or to acquire skill in the work in which they are deficient. In the group wishing to take up evening courses will be found (a) persons engaged in skilled occupations who wish to take up subjects related to their trades—as mathematics for carpenters, drawing for contractors, science for plumbers, costume designing for garment workers; (b) skilled workmen who need new knowledge to meet present demands, as oxy-acetylene welding for blacksmiths or metal workers; (c) specialized machine hands who wish to learn to operate other machines.

- f. The instruction in all evening schools or classes, shall be so shaped as to be supplementary to the day employment of those enrolled. Unit-trade courses may not be undertaken.

- g. It is desirable to bring together a group of persons of allied interests or occupations for that form

of instruction that will be immediately helpful to them in their daily work. The length of the courses thus offered may vary from a few weeks to a number of months, according to their purpose and character.

Qualifications of Teachers.

h. Teachers shall be chosen because of special fitness to give the training desired.

1. A shop teacher shall possess at least a thorough elementary education, exceptional skill in the subject to be taught, proven ability to impart knowledge and skill to others, good health, good standing as a workman and citizen and, after January 1, 1919, shall have completed or shall be enrolled in an established teachers' training course.
2. A teacher of related subjects shall present satisfactory evidence of the completion of a four year high school course; at least a two year technical course or in each case its equivalent, shop contact or shop experience in the subjects to be taught; and, after January 1, 1919, shall have completed or shall be enrolled in an established teachers' training course.
3. No person shall be qualified to teach in evening schools or classes for which Federal aid is granted unless he holds a certificate for this work issued by the State

Department of Education
upon recommendation of
the State Board.

The short-units outlined under trade and industrial education in the back of this bulletin are suggestive of what may be done in evening class instruction.

C. PART-TIME SCHOOLS OR CLASSES.

a. **Trade extension part-time schools or classes.**

- (1) The controlling purpose shall be to train for useful employment.
- (2) No person may be admitted who is under fourteen years of age.
- (3) The plant and equipment shall be such as will afford ample facilities for the conduct of the work. Space in buildings devoted to other school purposes may be utilized provided such double use is not permitted to interfere with the efficiency of the part-time work.
- (4) In order to receive Federal aid for part-time schools or classes the expenditure for maintenance for this work shall be sufficient to satisfy the State Board that it will be done efficiently.
- (5) The courses must provide for instruction in such subjects as will (a) be of direct assistance to the pupils for growth and promotion in the trades or industries in which they are employed, and (b) tend to increase their civic and vocational intelligence.

Within certain limits, part-time classes may have a variety of arrangements in regard to the length of the courses and places of conducting the classes.

Part-time classes must be in session 144 hours or more during the year. The arrangement of the courses in regard to time may be as follows:

Alternate-day or alternate-week plan:

One day or week in the shop and one day or week in school.

The two-student plan: Students in school on alternate weeks or days.

Three-forenoon or afternoon plan:

Each student in school a total of eight or twelve hours per week divided into four-hour periods.

The dull season plan: Tradesmen or apprentices may attend classes during the day for a period of six weeks or more during the dull season of their particular trade or occupation.

The place of holding the classes would depend largely on the group taking the work. There is no reason why the shop work in most instances could not be given to better advantage in a centrally located commercial shop rather than in the school shop. The drawing, mathematics, and science related to the particular trade could be given in the school classrooms and laboratories.

(6) Instruction shall be based upon the actual needs of pupils as discovered by interviews with employers, foremen, parents, former teachers and others, observation of pupils during employment, when possible, and school-room reaction.

(7) The courses shall be not less than 144 clock hours in length.

(8) QUALIFICATIONS OF
TEACHERS.

- (a) The minimum qualifications of a shop teacher shall be sound elementary education, exceptional skill in the trade to be taught as evidenced by at least three years of experience beyond the apprenticeship stage, proven ability to impart skill to others, good health good standing as a workman and citizen at least twenty - one years of age, and shall have completed or be enrolled in an established teacher's training course after January 1, 1919.
- (b) Teachers of related subjects shall present satisfactory evidence of the completion of a four year high school course, at least a two year technical course in the subjects to be taught, or, in each case, its equivalent, and at least one year of shop experience, or contact with the trades in which they propose to teach the related subjects. After January 1, 1919, they must have also completed or be enrolled in an established teachers' training course.

- (c) No person shall be qualified to teach in a part-time trade extension course unless he holds a certificate for this work issued by the State Department of Education upon the recommendation of the State Board.

The courses outlined under part-time schools or classes in the back of this bulletin are suggestive of what may be done in trade extension part-time classes.

b. Trade preparatory part-time schools or classes.

The group of students taking work in trade-preparatory classes differs from the group in trade-extension classes in that the students come from various occupations other than the trades which they wish to take up. The course of study must, therefore, be elementary.

The courses outlined under part-time schools or classes in the back of this bulletin are suggestive of what may be done in trade preparatory part-time classes.

c. General continuation part-time schools or classes.

- (1) The controlling purpose shall be the improvement of the civic and vocational intelligence of persons under non-trade employment.
- (2) No person may be admitted who is under fourteen years of age.
- (3) The plant and equipment shall be such as will afford ample facilities for the conduct of the work. Space in buildings devoted to other school purposes may be utilized provided such dou-

ble use is not permitted to interfere with the efficiency of the continuation school or classes.

- (4) The annual expenditure for maintenance must be sufficient to satisfy the State Board that efficient work can be maintained.
- (5) The course of study must be planned to provide for the improvement of the pupils in useful general knowledge and to assist and direct them in deciding upon a vocation.
- (6) The methods of instruction shall be based upon the peculiar needs of the group of pupils to be taught. To this end information must be secured from previous school records, former teachers, parents and present and past employers. Much attention should be given to enlightening and advising pupils with reference to desirable occupations.
- (7) The length of term for continuation schools or classes shall be not less than the equivalent of eight clock hours per week and at least 144 clock hours each year.
- (8) The minimum qualifications of teachers shall be:
 - (a) Scholastic training adequate for teaching in the 7th, 8th and 9th grades.
 - (b) After January 1, 1920, a person shall have completed or be enrolled in

the course of study outlined for teachers of continuation schools. Teachers of commercial subjects must have had, besides the training in the courses that they propose to offer practical experience in commercial work or salesmanship. After January 1, 1920, they must have completed the courses outlined for commercial teachers. Teachers of related subjects in part-time classes for junior nurses must be qualified high school instructors in the classes they propose to teach.

- (c) Proven ability in teaching persons of the class likely to enter a continuation school.
- (d) Definite and reasonably thorough knowledge of vocational conditions and of what constitutes fitness and aptitude for particular industrial occupations.
- (e) No person shall be qualified as teacher in a continuation school or class until licensed for such teaching by the State Department of Education. Such license shall be issued only upon the recommendation of the State Board as to the applicant's fitness under the foregoing requirements.

The courses outlined under part-time schools or classes in the back of the bulletin are suggestive of what may be done in general continuation part - time classes.

D. Day unit trade school.

- a. The controlling purpose in all courses shall be to prepare pupils for intelligent and efficient service in a particular trade or industrial field.
- b. No person shall be admitted who has not attained the age of fourteen years.
- c. The plant and equipment shall be acceptable to the State Board as adequate and suitable for the trade and industrial work which the school proposes to undertake. The factory type of construction and equipment is best adapted to this use and, if a new building is to be provided, it shall be so differentiated from the ordinary type of school building. Any building or space used for shop purposes must conform to the factory laws of the State as to light, heat and ventilation. The plant and equipment proposed for use shall not be considered as satisfactory until it has been inspected and approved by the State Board or its regularly appointed agent.
- d. The amount expended for maintenance shall be sufficient to satisfy the State Board that reasonable standards of work are assured and that efficient teachers are secured to do the work.

e. METHODS OF INSTRUCTION.

- (1) All courses shall include provision for an intimate knowledge of the nature and

source of supply of the materials employed in construction work, including their adaptation to particular uses and their cost.

- (2) Instruction shall provide for an intimate knowledge of the tools and machines used in the trades taught, their cost, use and care.
- (3) Stress shall be placed upon safety devices and such use of tools and machinery as will safeguard the operator and his fellow workers.
- (4) The entire organization and administration of school shops shall, so far as possible, be in exact accordance with that employed in the best industrial establishments. The teacher, shall, so far as school conditions permit, direct all shop activities as would the foreman of an industrial shop.
- (5) Much attention shall be given, under the direction and supervision of the teacher, to the study of actual industrial operations. This may be accomplished by observation in accessible shops and factories, followed by definite classroom discussion of a constructive character.
- (6) The guiding purpose in all courses shall be to train pupils for intelligent and efficient service in a particular trade or industrial field.

- f. At least one-half of the entire time of each school week shall be given to practical shop work on a useful and commercially productive basis.
- g. The minimum length of the school year shall be nine months.
- h. At least thirty clock hours per week shall be given to instruction which shall include both practical and academic work.
- i. The courses outlined under unit trade schools in the back of this bulletin are suggestive of what may be done in day unit trade schools.

QUALIFICATIONS OF TEACHERS

- (1) Teachers shall be of two classes: (1) vocational, and (2) non-vocational.
- (2) Vocational teachers shall be of two classes: (1)shop, and (2) related.
- (3) Federal aid is granted only for the salaries of vocational teachers.
- (4) The minimum qualifications of shop teachers are (a) a sound elementary education, (b) exceptional skill in the trade or industry to be taught which is usually evidenced by three years of experience beyond the apprenticeship stage, (c) proven ability to impart skill to others, (d) good health, (e) good standing as a workman and a citizen, (f) at least 21 years of age, (g) that they shall have completed or be enrolled in an established teachers' training course after January 1, 1919.

(5) The minimum qualifications of a teacher of related subjects are (a) the completion of at least a two-year technical course in the subjects to be taught in addition to the completion of a four-year high school course, or, in each case its equivalent, (b) at least one year of shop experience or contact with the trade in which he proposes to teach the technical subjects, (c) that he shall have completed or be enrolled in an established teachers' training course after January 1, 1919.

(6) The minimum qualifications of a teacher of non-vocational subjects are (a) scholastic training adequate for teaching in the seventh, eighth and ninth grades of the public schools of Minnesota, (b) proven ability in teaching persons of the class likely to enter a trade school, and (c) at least a layman's knowledge of the trades to be taught.

(7) CERTIFICATION.

(a) No person shall be qualified as a vocational teacher until licensed for such teaching by the State Department of Education. No license shall be issued for this service until the State Board has certified the applicant's fitness under the foregoing requirements.

(b) Such licenses shall be issued for one year and may be renewed only as authorized by the State Board. After three years of successful experience, application may be made for a permanent certificate.

(c) Such license shall always state (1) the period for which it is valid, (2) the subject or subjects to be taught, and (3) the name and location of the school for which it is valid.

E. GENERAL INDUSTRIAL SCHOOLS FOR CITIES AND TOWNS OF LESS THAN 25,000 POPULATION.

- a The purpose of instruction in communities of this size is to furnish pupils such general training in local industries as will make them more successful wage earners and more intelligent citizens.
- b No pupil shall be admitted to these courses who is under 14 years of age.
- c The plant and equipment shall be such as to satisfy the State Board that the school will be able to carry out in an efficient manner the work which it is proposed to undertake.
- d The annual expenditure for maintenance in such schools shall be sufficient to secure competent instruction and provide adequate equipment.
- e The character and content of the course of study shall be determined by the predominance

of specific trades or industries in the community but always with a substantial background of academic work of a practical nature.

t. METHODS OF INSTRUCTION.

- (1) All courses shall include provision for an intimate knowledge of the nature and sources of supply of the materials employed in construction work, including their adaptation to particular uses, and their cost.
- (2) Instruction shall provide for an intimate knowledge of the tools and machines used in the trades taught, their cost, use and care.
- (3) Stress shall be placed upon safety devices and such use of tools and machines as will safeguard the operator and his fellow workers.
- (4) The entire organization and administration of school shops shall, so far as possible, be in exact accordance with that employed in the best industrial establishments. The teacher shall, so far as school conditions permit, direct all shop activities as would the foreman of an industrial shop.
- (5) Much attention shall be given, under the direction and supervision of the teacher, to the study of actual industrial operations. This shall be accomplished by observation in accessible shops and factories, followed by definite class room discussion of a constructive character.

- (6) The guiding purpose in all courses shall be to prepare pupils for intelligent and efficient service in the industrial field.
- g. At least one-half of each week of the course shall be given to practical work on a useful and commercially productive basis.
- h. The school year shall be at least nine months in length.
- i. The number of hours of instruction shall be at least twenty-five clock hours per week.
- j. The qualifications of teachers shall be the same as those required for unit-trade schools, found on page 29 of this bulletin.

The courses outlined in the back of this bulletin are suggestive of what may be done in general industrial schools for cities and towns of less than 25,000 population.

3. HOME ECONOMICS EDUCATION.

A. It is the intention to use Federal funds for aid to the following kinds of home economics education for the fiscal year ending June 30, 1920.

- a. Evening home economics schools or classes.
- b. Part-time home economics schools or classes.
- c. Day schools or classes.

B. EVENING HOME ECONOMICS SCHOOLS AND CLASSES.

- a. No person shall be admitted who is under sixteen years of age.
- b. The same plant and equipment used for day schools may be used for evening schools and classes provided the double use is not permitted to interfere with evening work.
- c. The expenditure for maintenance shall be sufficient to satisfy the State Board that the work can be done efficiently.

- d. The courses offered shall be such as to meet the needs of the persons attending. These courses will be organized on a short unit basis and will deal with such topics as the following:
Food Study and Cooking.
Planning and Preparation of Meals.
Garment Making.
Care, Repair and Remodeling of Clothing.
Dressmaking.
Textiles.
Millinery.
Home Nursing.
Child Care and Training.
House Planning and Furnishing.
Home Management.
- e. The instruction shall in all cases be supplementary to the work in home-making.
- f. Methods of instruction shall be in the nature of lectures, discussions, demonstrations, reference reading and laboratory practice. All instruction is to be made concrete by actual operation and manipulation wherever possible, and allied as closely as possible with the needs of the home.

A suggested course in Textiles is given under type courses in Home Economics in the back of this bulletin.

g. **QUALIFICATIONS OF TEACHERS.**

- (1) No person shall be qualified to teach home economics in evening schools and classes who has not had at least three years of successful practical experience in the work to be taught.
- (2) All teachers shall present satisfactory evidence of ability to impart skill and knowl-

edge to others and shall, after January 1, 1920, present credentials for the completion of an established teacher training course.

- (3) For the present school year no specific requirement for teacher training in home economics will be made and certification will be based upon the general fitness of the applicant, this to be determined by the State Supervisor of Home Economics.
- (4) No person shall be qualified to teach home economics in evening schools or classes until in possession of a certificate for that work issued by the State Department of Education upon recommendation of the State Board.

C. PART-TIME HOME ECONOMICS SCHOOLS AND CLASSES.

- a. No person shall be admitted who is under 14 years of age.
- b. The same plant and equipment used for day schools may be used for part-time schools and classes provided that such double use is not permitted to interfere with the efficiency of the part-time work.
- c. The expenditure for maintenance shall be sufficient to satisfy the State Board that the work can be done efficiently.
- d. The courses offered shall be planned with reference to the needs and ability of the persons attending and for the purpose of increasing their civic and vocational intelligence. In such courses at least fifty per cent of the time will be given to Home

Economics instruction, and they will constitute home economics extension classes.

The short unit courses indicated for the evening schools and classes may be grouped in sequence to form desirable courses for part time work.

Suggested courses for part-time schools are given under type courses in Home Economics in the back of this bulletin.

- e. Methods of instruction must differ from both those employed in evening schools and classes and day schools and still partake of the character of both. Less dependence must be placed upon lectures and demonstrations and more stress must be given to the preparation of assigned tasks and to individual manipulation.
- f. Part-time courses must be at least 144 clock hours in length, provided only that the hours for this instruction must be taken out of the regular working day.

g. **QUALIFICATIONS OF TEACHERS.**

- (1) No person shall be qualified to teach home economics in part-time schools or classes who has not had at least three years of successful practical experience in the work to be taught.
- (2) All teachers shall present satisfactory evidence of ability to impart skill and knowledge to others and shall, after January 1, 1920, present credentials for the completion of an established teacher training course.
- (3) For the present school year no specific requirement for teacher training in home economics will be made and

certification will be based upon the general fitness of the applicant to be determined by the Supervisor of Home Economics.

- (4) No person shall be qualified to teach home economics in a part-time school or class until in possession of a certificate for that work issued by the State Department of Education upon recommendation of the State Board.

D. DAY SCHOOLS IN CITIES.

- a. No person shall be admitted who is under fourteen years of age.
- b. Required or minimum plant and equipment.

The minimum floor space allotted to home economics shall be adequate for the work to be undertaken.

The quarters shall meet the present requirements of the State Board as to (1) heating, (2) lighting, (3) ventilation, (4) ceiling height, and (5) toilet and lavatory facilities.

Besides the recitation room there shall be provided at least the following: (1) kitchen, (2) sewing room, (3) dining room space. Where possible it is desirable to have a separate dining room, and a bed room and space and equipment for elementary work in home nursing. Some provision must be also made for laundry-work.

Each room shall be equipped with such apparatus and appliances as are necessary to carry out the instruction and courses of study offered. So far as possible, the equipment shall correspond in

quality and variety with that which is desirable for the average wage earner's home. In quantity it shall be adequate for a class enrollment of twenty (20.)

- c. The minimum expenditure for maintenance shall be one thousand dollars (\$1,000).
- d. Character and content of courses of study.

Either of two courses of study may be used in the all-day vocational school. In one of these the vocational half day will be given to home economics and related subjects, and in the other the vocational half day will be given to home economics subjects only. These courses should be selected with reference to the needs of the school.

Type courses are given under Home Economics in the back of this bulletin.

e. METHOD OF INSTRUCTION.

In presenting the work the recitation and the laboratory work will be combined in one period and the instruction will not be differentiated into the two types of work.

- f. One half of each day will be given to practical work on a useful or productive basis. This practical work may be interpreted as home economics subjects or home economics and related subjects. If the practical work is interpreted as home economics subjects and the school day is six hours in length at least 120 minutes of the vocational half day will be given to home economics and the remainder of the half day to related subjects. If the practical work is interpreted as home economics subjects and related subjects and the school day is five

hours in length at least 90 minutes of the half day must be given to home economics subjects and the remainder of the half day to related subjects.

The development of work in home projects providing contact with problems connected with the vocation of home making shall be the aim of every school offering courses in vocational home economics. Such projects shall have some supervision.

Supplementary problem work related to the class work and providing contact with the problems connected with the vocation of home making shall be a part of every course in vocational home making.

- g. Length of school year.
 - (1) In cities and towns of 25,000 or more the school year will not be less than nine months in length.
 - (2) In cities and towns of less than 25,000 the school year may be less than nine months in length.
 - (3) In State Schools of Agriculture offering home economics courses which are otherwise approved the school year may be not less than six months with provision for supervised work during the remaining six months.
- h. Hours of instruction per week.
 - (1) In cities and towns of 25,000 or more the hours of instruction per week shall not be less than thirty.
 - (2) In cities and towns of less than 25,000 the hours of instruction shall not be less than twenty-five.

i. QUALIFICATIONS OF TEACHERS.

- (1) Adequate vocational experience such as might be secured by a reasonable period in the management of a home.
- (2) At least fifteen hours of professional training.
- (3) The completion of the prescribed course in home economics in the University of Minnesota or in other institutions of equal rank.
- (4) No person shall be qualified to teach home economics in a day school until in possession of a certificate for that work issued by the State Department of Education upon the recommendation of the State Board.

TYPE COURSES IN AGRICULTURE

Courses of Study for Vocational Agriculture.

TWO YEAR COURSE

FIRST YEAR

1. Field Crops and Soils.
2. Farm Machinery, Farm Accounting and Shop Work.
3. English and Composition.
4. Related Work.

SECOND YEAR

1. Animal Husbandry, Dairying and Poultry.
2. Horticulture and Shop Work.
3. English and Composition.
4. Related Work.

THREE YEAR COURSE

FIRST YEAR

Subject	Length of Course in weeks	Minimum recitations each week
1. Field Crops and Soils.....	24 to 36	5 periods of 90 minutes each
2. Related Work and *Applied Farm Work.....	24 to 36	5

3. English and Composition.....	24 to 36	5
4. Selected by Superintendent.....	24 to 36	5

SECOND YEAR

1. Animal Husbandry (including Dairy- ing and Poultry....	24 to 36	5 periods of 90 minutes each
2. Related Work and *Applied Farm Work.....	24 to 36	5
3. English and Composition.....	24 to 36	5
4. Selected by Superintendent.....	24 to 36	5

THIRD YEAR

1. Farm Management, Farm Mechanics and Horticulture..	24 to 36	5 periods of 90 minutes each
2. Related Work and *Applied Farm Practice.....	24 to 36	5
3. English and Composition.....	24 to 36	5
4. Selected by Superintendent.....	24 to 36	5

*Applied Farm Practice to occupy entire time during vacation period.

FOUR YEAR COURSE

FIRST YEAR

Subject	Length of Course in weeks	Recitations each week	Laboratory periods each week
Required:			
Field Crops....	24 to 36	{ Five periods of 90 min- utes each per week	
Project work to be arranged			
English and Composi- tion.....	24 to 36	5	
Farm Arith- metic.....	24 to 36	5	
Applied Science	24 to 36	3	2
Content of Applied Science:			
18 weeks Botany.			
2 weeks Ventilation and Light in barns.			

- 2 weeks Weather.
- 3 weeks Pulleys and Levers.
- 3 weeks Blacksmithing at local shop and study.
- 8 weeks Elements of Chemistry.

SECOND YEAR

Required:

Animal Hus- bandry.....	24 to 36	{	Five periods of 90 min- utes each per week	
(Including dairying and poultry.) Project work to be arranged.				
Agricultural Carpentry and Me- chanical				
Drawing....	24 to 36			5.
English and Composition	24 to 36		5	
Industrial History.....	24 to 36		5	

THIRD YEAR

Required:

Soils and Horticulture	24 to 36	{	Five periods of 90 minutes each per week
Project work to be arranged.			
Rural Economics	12 to 18		5
Civics, Citizenship and Farm Law...	12 to 18		5
English.....	24 to 36		5
Elective (one)—			
Mathematics	24 to 36		5
History.....	24 to 36		5
Foreign Language....	24 to 36		5
Science.....	24 to 36		3
			2

FOURTH YEAR

Required:

Farm Accounts	{	Five periods of 90 minutes each per week
Farm Management & Farm Mechanics.....		
24 to 36		
Project work to be arranged.		
Applied		
Physics.....	24 to 36	3 2

Elective (two)—		
Mathematics	24 to 36	5
History.....	24 to 36	5
English.....	24 to 36	5
Foreign		
Language....	24 to 36	5

Notes on the Course of Study.

The subjects indicated under 1 and 2 in the two and three year courses must be given to an identical group during the first half or second half of the school day. Subject 1 and subject 2 will occupy approximately one-quarter of the school day, except that in the three year course No. 2 may occupy one period. A reasonable amount of this time may be used for supervising text and project study. Sometimes the best use of the entire half day may be in applied farm work or in outside laboratory exercises.

TYPE COURSES IN TRADE AND INDUSTRIAL EDUCATION

Evening Industrial Schools or Classes.

The short-units outlined below are suggestive of what may be done in evening class instruction:

Building Construction:

LESSONS

BC 1	House framing for carpenters.....	15
BC 2	Roof construction for carpenters.....	15
BC 3	Outside trimming and interior finishing for carpenters.....	15
BC 4	Operation of "Universal Woodworker" for carpenters and contractors.....	20
BC 5	Mill room practice.....	20
BC 6	Estimating builders' hardware.....	10
BC 8	Mathematics for carpenters, plasterers, bricklayers, etc.....	20
BC 10	Elementary drawing for carpenters..	10
BC 12	Building ordinances.....	5
BC 13	Working drawings and specifications for contractors.....	20
BC 15	Estimating costs of small structures	20
BC 20	Figuring costs of large structures.....	40

Printing:

P	1	English for printers.....	15
P	2	Job composition.....	10
P	4	Imposition.....	15
P	6	Drawing and design for printers.....	15
P	8	Estimating costs for printers.....	10
P	10	Making ready on platen presses.....	10
P	15	Inks and paper.....	10

Courses in garment making industries:

G	3	Care of power machinery.....	5
G	4	Tacking, seaming and joining.....	10
G	6	Button-sewing, buttonholing.....	15
G	8	Sleeve-making and sleeve-setting.....	15
G	10	Design for clothing trades.....	20

Millinery:

M	2	Frame making.....	5
M	5	Covering frames.....	5
M	10	Trimming.....	10

A general course for journeymen carpenters, for example, could be made up of 100 or more short-unit lessons chosen from the courses suggested under the heading "Building Construction."

Part-time schools or classes.

Trade Extension part-time schools or classes.

The following courses are suggestive only:

Trade-extension part-time course for electrician's helper:

	HOURS
1. Fundamental mechanical and electrical laws.....	40
2. Elementary mathematics of electricity....	30
3. Drawing for electricians (making use of the standard conventions: blueprint reading, estimating materials).....	20
4. National electrical code rules and city ordinances on inside work in electricity with low voltage.....	30
5. Theory and use of instruments and batteries.....	30
Total.....	150

Trade extension course for plumber's helper:

1. Calking joints.....	20
2. Joint wiping and soldering.....	40

3. Installing fixtures.....	40
4. Hot water supply and circulation.....	20
5. Drawing for plumbers, blueprint reading	20
6. Plumbers' laws and ordinances.....	20
Total.....	160

Trade preparatory part-time schools or classes.

The following is a suggestive course:

Elementary Carpentry:	HOURS
1. Instruction in the use of hand tools (grinding and sharpening).....	20
2. Elementary exercises with hand tools....	20
3. Elementary instruction in the lay-out of such articles as packing crates, win- dow screen frames, and storm doors....	30
4. Drafting (use of drawing instruments, free-hand sketching, blueprint read- ing, and simple house planning).....	40
6. Mathematics for carpenters.....	20
8. Lumber and its uses.....	20
10. Adjustment and use of a band saw, ma- chine guards and their uses.....	20

General continuation part-time schools or classes.

The following is a suggestive course and is intended only to be of assistance in preparing a course adapted to the needs of an individual group:

	HOURS
Arithmetic or general mathematics.....	2
English.....	2
History and civics.....	2
Sewing, cooking or shop work.....	2
Music or physical culture.....	2
Mechanical or free-hand drawing.....	2

The following subjects might be offered in a retail selling course:

	HOURS
Retail Selling.....	3
Textiles and Merchandising.....	2
English.....	2
Store Problems.....	2
Citizenship.....	2
Related Art.....	2
Window Dressing.....	2
Show Card Writing.....	2

The following subjects might be offered in a part-time commercial course:

	HOURS
Mimeograph Operating.....	2
Loose-Leaf Ledger Accounting.....	2
Multigraph Operating.....	2
Stencil Cutting.....	2
Filing.....	2
Comptometer Operating.....	2
Business English.....	2
Advertising.....	2
Office Methods.....	2

Day unit trade schools.

Courses of study:

- (1) The following is a list of skilled trades in which courses may profitably be organized:

Carpenter, cabinet maker, electrician, machinist, pattern maker, stone mason, sheet metal worker, plumber, printer, sign painter, bricklayer, concrete worker, dress maker, milliner.

This list is only suggestive, and is not intended to limit the trades in which courses may be offered.

The length of courses shall not be less than one year and not more than four years.

- (2) All courses shall include provision for instruction in English, industrial history and citizenship.
- (3) All courses shall include provision for applied drawing, mathematics and elementary science, as related to the trades and industries being taught.
- (4) Each school shall give consideration to local industrial needs and shall, so far as possible, map out its course and direct its instruction with reference to those needs.

The following is a type course of two years:

FIRST YEAR •

ARCHITECTURAL DRAFTING.	HOURS
Drawing and design.....	15
Shop work (building trade group).....	5
Mathematics, including estimating.....	3

General science.....	2
Architectural history.....	1
Industrial history.....	2
English.....	2
Total.....	30

SECOND YEAR

Drawing and design.....	15
Shop work (building trade group).....	5
Applied mathematics.....	2
Science (strength of materials).....	3
Architectural history.....	1
Civics.....	2
English (writing specifications, contracts and reports).....	2
Total.....	30

General industrial schools for cities and towns of less than 25,000 population.

The following is a suggestive course for four years of high school work.

In cities where there is a demand for general all-day industrial classes, the courses should be built up about the various trade groups. Among the trade groups are mentioned the following: Metal trades, building trades, electrical trades, etc.

The course may vary from two to four years in length.

BUILDING CONSTRUCTION:	HOURS
Shop work (plumbing, sheet metal work).....	12
Mechanical drawing.....	4
General science.....	3
Mathematics, related.....	2
Industrial history.....	2
English.....	2
Total.....	25

TYPE COURSES IN HOME ECONOMICS

Type Course No. 1

A suggested group of lessons for a unit course in Textiles.

Evening Schools

TEXTILE PROBLEMS.	1 lesson
The present situation in textiles; future prospects for decline in prices. Need for wise	

selection of materials; novelty versus standard fabrics.

WOOL 1 lesson

Study of standard woolen and worsted fabrics. Care of wool clothing, etc., cleaning, protection from moths.

Methods of determining quality of fabrics and detecting adulteration and substitution of other fibers.

COTTON 2 lessons

Study of standard cotton fabrics.

Finishes of cotton cloth—desirability.

Methods of determining:

Fastness of color.

Amount of sizing.

Permanency of luster (mercerization).

Strength.

LINEN 2 lessons

Study of linen fabrics and union fabrics.

Relative desirability of linen and cotton for Table linen.

Toweling.

Clothing, handkerchiefs, etc.

Selection and care of linens and other household furnishings.

SILK 2 lessons

Characteristics and uses.

Study of fabrics.

Substitution, imitations, adulterations.

Mercerized cotton, artificial silk, "weighting."

Tests for determining quality.

RENOVATION OF GARMENTS AND MIL-

LINERY MATERIALS

2 lessons

Laundering and cleaning.

Removal of spots and stains.

Pressing, etc.

Dyeing.

Type Course No. 2

COURSE FOR PART-TIME SCHOOLS. FOODS AND COOKERY, 24 LESSONS.

FOOD PRESERVATION 3 lessons

Food Groups.

Sources.

Use to the body.

Digestion.

STARCH COOKERY	3 lessons
White Sauces.	-
Creamed soups.	
Creamed vegetables.	
Cornstarch mold or tapioca.	
CEREALS	2 lessons
Granular and rolled.	
Left-over cereals.	
VEGETABLES	3 lessons
Starch and sugar group:	
Potatoes, squash, etc.	
Mineral group:	
Spinach, chard, etc.	
Protein group:	
Beans, peas, etc.	
BATTERS AND DOUGHS	8 lessons
Quick breads:	
Use of leavening agents.	
Calculation of baking powder required.	
Substitution of soda and sour milk for bak-	
ing powder.	
Preparation of	
Griddle cakes	
Muffins	
Baking powder biscuits	
Pastry	
Cake	
Yeast bread and rolls	
EGGS	3 lessons
Poached, scrambled and omelets	
Custards	
Sponge cakes	
MILK	1 lesson
CHEESE	1 lesson
Making of cottage cheese	
Dishes with foundation of cottage-or Ameri-	
can cheese.	

Type Course No. 3

COURSE FOR PART-TIME SCHOOLS: CARE AND
REPAIR OF CLOTHING, 24 LESSONS.

CARE	3 lessons
Removal of spots and stains and protection	
from moths.	
Sponging	
Soap, water and ammonia	
Gasoline	

Stain removal

- Coffee, tea and cocoa
- Fruits and vegetables
- Grass and other green foliage
- Grease (heavy)
- Indelible pencil and ink
- Iron rust
- Mildew
- Paints and varnish
- Perspiration
- Water spots

Protection from moths

- Care and watchfulness
- Airings and sun baths
- Storage during warm weather
- Fumigation

Pressing 1 lesson

- Wool
- Cotton
- Laces and embroideries
- Velvet
- Steaming

Repair

- Darning 2 lessons

Wool and cotton

- Three-cornered darn
 - Yarn from cloth, hair, colored thread to match
- Reinforced darn
- Weaving in and replacing broken yarns in thin places
- Table linen and towels
 - Hand and machine
- Stockings
- Patching on wool and cotton garments, sheets and other household articles 2 lessons
- Flannel Patch
- Hemmed patch
- Overhanded patch
- Mending tissue
- Starched patch on net curtains

General repair and replacement of worn parts of garments, 4 lessons.

General repair

Loose or lost buttons, hooks and eyes,
snap fasteners

Frayed buttonholes

Rips

Replacing worn parts

Underarm pieces in waists, etc.

Cuffs

Collars

Facings

Skirt braids

Lace and embroidery edging on waists,
corset covers, nightgowns, etc.

Remaking of garments 12 lessons

Type Course No. 4

HOME MANAGEMENT—24 LESSONS

This includes a study of the various divisions of the family budget and should be adapted to the class.

Significance of the woman's part in

homemaking 3 lessons

The family income

What constitutes a typical family

Sources of the family income

Average wages and salaries in the community

The physical efficiency income against the social efficiency income

Divisions of income

Food as a division of the budget, 7 lessons

Food requirement for body needs

Factors affecting the requirement

Method of measuring value of food

Planning of a day's meals to meet the above requirements

Table service

Calculation of cost of food from above meals for 100 calorie portion

Person per day

Family per day

Family per year

Means of reducing cost of food

Relation of food cost to income

Shelter as a division of the income 3 lessons

Renting against owning

Requirements of a house	
Survey of rents in community	
Amount to be spent for shelter	
Relation to income	
Desirable house plans	
Equipment for the home	6 lessons
Principles of design to be observed	
Discussion of	
Walls—woodwork, ceiling	
Floor coverings	
Furniture	
Labor saving devices	
Clothing	1 lesson
Use	
Factors affecting amount to be spent	
Relation of clothing expenditure to income	
Operating expenses	1 lesson
Items included	
Processes involved	
Amount required	
Advancement	1 lesson
Purpose	
Items included	
Need for savings	
Types of investments	
Relation to income	
Discussion of family budget as a whole	
with household accounts	2 lessons

Course No. 5

SUGGESTED COURSES OF STUDY FOR VOCATIONAL HOME ECONOMICS

Type I. VOCATIONAL HALF DAY GIVEN TO
HOME ECONOMICS SUBJECTS.

SIX HOUR DAY:

FIRST YEAR

FIRST SEMESTER

	Times per week	Length of period
Garment Making.....	5	90
Food Study and Cooking.....	5	90
Biology.....	7	45
English.....	5	45

SECOND SEMESTER

	Times per week	Length of period
Dressmaking and Textiles.....	5	90
Advanced Foods and Cook- ery.....	5	90
Drawing and Design.....	5	90
English.....	5	45

SECOND YEAR

FIRST SEMESTER

	Times per week	Length of period
Advanced Dressmaking and Millinery.....	5	90
Planning, preparation and serving of meals.....	5	90
Physiology, Hygiene and Home Nursing.....	7	45
English.....	5	45

SECOND SEMESTER

	Times per week	Length of period
Household Budgets and Ac- counts.....	5	90
House Planning and Furnish- ing.....	5	90
Civics.....	5	45
English.....	5	45

Course No. 6

Type II. VOCATIONAL HALF DAY GIVEN TO
HOME ECONOMICS AND RELATED SUBJECTS.

Suggested two-year courses for five-hour and
six-hour day.

FIVE-HOUR DAY

FIRST YEAR

FIRST SEMESTER

	Periods per week	Length of period
Garment Making and Tex- tiles.....	5	90
Drawing and Design.....	7	45

English.....	5	45
Elective.....	5	45

SECOND SEMESTER

	Periods per week	Length of period
Food Study and Cooking.....	5	90
Applied Science, Biological....	7	45
English.....	5	45
Elective.....	5	45

SECOND YEAR

FIRST SEMESTER

Dressmaking and Millinery....	5	90
House Planning and Furnish- ing.....	7	45
English.....	5	45
Civics and Citizenship.....	5	45

SECOND SEMESTER

Home Management, House- keeping, Planning a n d Serving of Meals, Laundry, Household Accounts.....	5	90
Physiology, Hygiene and Home Nursing.....	7	45
English.....	5	45
Elective.....	5	45

SIX-HOUR DAY

FIRST YEAR

FIRST SEMESTER

	Periods per week	Length of period
Garment Making.....	5	90
Textiles.....	5	45
Drawing and Design.....	5	90
English.....	5	45

SECOND SEMESTER

	Periods per week	Length of period
Food Study and Cooking.....	5	90
Dressmaking.....	5	90
Biology.....	7	45
English.....	5	45

SECOND YEAR

FIRST SEMESTER

	Periods per week	Length of period
Planning and preparation of Meals.....	5	90
House Planning and Furnish- ing.....	7	45
Physiology, Hygiene and Home Nursing.....	7	45
English.....	5	45

SECOND SEMESTER

	Periods per week	Length of period
Advanced Dressmaking and Millinery.....	5	90
Household Budgets, Accounts, Laundry, etc.....	5	90
Civics.....	5	45
English.....	5	45

SUGGESTED FOUR-YEAR COURSE IN VOCATIONAL HOME ECONOMICS

FIRST YEAR

	5-hr. day Periods	Mins.	6-hr day Mins.	Units
English.....	5			1
Electives.....	10			2
Drawing and Design.....	5	90	90	1½
Garment making	5	90	120	1½
General science applied to the household.....	7-8	45	45	1½
Food study and cooking.....	5	90	120	1½

SECOND YEAR

English.....	5			1
*Electives.....	10			2
General science..	7-8	45	45	1½
Elementary dressmaking....	5	90	120	1½

Housekeeping, household ac- counts, plan- ning and serv- ing of meals.....	5	90	120	½
Physiology, hy- giene, home nursing.....	7-8	45	45	½

*Civics and citizenship suggested.

THIRD YEAR

English.....	5			1
*Electives.....	10			2
Household chem- istry.....	7-8	45	45	1
Clothing design, house plan- ning and house furnishing.....	5	90	120	½
Textiles, milli- nery, dress- making.....	5	90	120	½

*Elementary economics or sociology suggested.

FOURTH YEAR

English.....	5			1
Electives.....	10			2
Household phys- ics.....	7-8	45	45	1
Textiles, milli- nery, dress- making.....	5	90	120	½
Elementary die- tetics, home management.....	5	90	120	½

V. TEACHER TRAINING

1. The following is the proposed division of available teacher training funds for the year 1919-1920.
 - A. For the maintenance of training of agricultural teachers, thirty-five per cent.
 - B. For the maintenance of the training of teachers of trade and industrial subjects, thirty-five per cent.
 - C. For the maintenance of the training of teachers of home economics subjects, thirty per cent.

NOTE: In accordance with a recent ruling of the Federal Board, it is the intention of the State Board to use Federal funds available for teacher training in part payment of the cost of supervision, as follows:

- a. For the supervision of agriculture, one-half of the traveling expenses, salary, printing and clerical help for the supervisor.
- b. For the supervision of trade and industrial instruction, one-half of the salary, traveling expenses, printing and clerical help for the supervisor.
- c. For the supervision of home economics instruction, one-half of the salary and traveling expenses of the supervisor.

Teacher Training by State Supervisors.

Each supervisor shall give special attention to the fitness of teachers in his department, observing carefully the organization, classification, program, presentation of material, testing for results, and all other matters relating to successful teaching.

He shall advise with teachers relative to the improvement of their instruction and shall from time to time require from teachers reports showing changes made and reading done by teachers looking toward professional improvement.

2. Agriculture.

- A. The College of Agriculture of the University of Minnesota is designated for the training of agricultural teachers.
- B. The length of the course is:
 - a. Four years.
 - b. One hundred forty-four unit hours.
- C. Entrance requirements.
 - a. At least two years of practical farm experience.
 - b. The completion of a four year high school course or its equivalent.
- D. Course of study.

PROPOSED CURRICULUM FOR THE PREPARATION OF TEACHERS OF AG- RICULTURE BY THE UNIVERSITY OF MINNESOTA.

General requirements for all Students in Agriculture.

Explanation of course numbers: Odd numbers indicate first-semester courses; even numbers, second-semester courses. A combination of the two (e. g., 5-6) indicates courses continuing through the year.

All undergraduate courses are numbered from 1 to 100. All courses open to undergraduates and graduates are numbered from 101 to 200.

One credit hour is equivalent to (1) one lecture or recitation period requiring two hours of preparation, (2) two periods of laboratory work requiring one hour of preparation, or (3) three periods of laboratory work with no preparation, each week for one semester.

Freshman Year.

All of the following work is required of every student except for the exemptions indicated. For some students this represents more than the regular amount of work of eighteen credit hours per semester. In such cases those subjects listed below which cannot be taken in the freshman year must take precedence the following year.

1. Non-credit courses required for graduation in addition to the 144 credit hours.

Agron. 7, Farm Practices. Those entering with sufficient knowledge of general farm practices, as shown by certificate or examination, are exempt.

Freshman Lectures. A course of nine lectures intended primarily to familiarize the new student with the college, college customs, and methods of procedure.

Military Drill. One afternoon per week both semesters. Students found to be physically unfit may be required to substitute special corrective exercises in gymnasium.

Phys. Educ. 1, Personal Hygiene. Two lectures per week, first six weeks of the first semester.

Phys. Educ. 3a, b, Gymnasium. Two hours per week, last twelve weeks of the first semester, or the first twelve weeks of the second semester.

2. General Courses. All of the following, except An. Biol. 3-4, Chem. 33, and Rhet. 3, may be registered for either semester except that the proper sequence of continuation courses and the prerequisites must be observed. Ordinarily, if Botany is registered for in the freshman year, registration for Zoology should be postponed until the sophomore year, and vice versa.

Sophomore Year.

1. Non-credit courses required for graduation in addition to the 144 credit hours.
Military Drill. One afternoon per week both semesters. Students found to be physically unfit may be required to substitute special corrective exercises in gymnasium.
2. Freshman courses which were not completed during the freshman year.
3. General Courses. With the exception of Farm Eng. 21-22, these courses may be registered for either semester except that the proper sequence of continuation courses and prerequisites must be observed.

COURSES OF STUDY FOR THE PREPARATION OF TEACHERS OF VOCATIONAL AGRICULTURE.

(The College of Agriculture, Forestry, and Home Economics will operate on the quarter basis, but no definite curricula changes will be made for prescribed courses.)

FRESHMAN YEAR—Required Subjects.

FIRST SEMESTER

Course No. and Name	Credits
Agronomy & Farm Mgt. 1 (Farm Crops)	3
Botany 1-2 (General Botany)	3
Chemistry 3-4 (Advanced General Chemistry & Qualitative Analysis).....	3

Farm Engineering 11 (Applied Mathematics).....	3†
Dairy Husbandry 7 (Elements of Dairy Husbandry)	3
Rhetoric 1-2 (Rhetoric) 6.....	3
	<hr/> 18

SECOND SEMESTER

Course No. and Name	Credits
Farm Engineering (Farm Motors).....	3
Botany 1-2 (General Botany).....	3*
Chemistry 3-4 (Advanced General Chemistry and Qualitative Analysis).....	3
Animal Husbandry 1 (Types and Breeds of Livestock).....	3
Economics 2 (Industries & Commerce).....	3
Rhetoric 1-2 (Rhetoric).....	3
	<hr/> 18

SOPHOMORE YEAR—Required Subjects.

FIRST SEMESTER

Course No. and Name	Credits
Animal Biology 3-4 (General Zoology).....	3
Agr. Bio-chemistry 7-8 (General Agr. Bio-chemistry)	3
Economics (Principles of Economics).....	3
Farm Engineering 21-22 (Agricultural Physics).....	3**
Rhetoric 11 (Argumentation).....	3
Political Science 1 (American Government).....	3
Agronomy & Farm Mgt. 3 (Farm Machinery)	3
	<hr/> 21

SECOND SEMESTER

Course No. and Name	Credits
Animal Biology 3-4 (General Zoology).....	3
Agr. Bio-chemistry 7-8 (General Agr. Bio-chemistry).....	3
Pathology 6 (Elements of Bacteriology)....	3
Farm Engineering 21-22 (Agricultural Physics).....	3**
Rhetoric 22 (Public Speaking).....	3
Farm Engineering 3 (Mechanical Drawing).....	3††
Animal Husbandry 4 (Livestock Judging)	1½
	<hr/> 19½

JUNIOR YEAR—Required Subjects.

FIRST SEMESTER

Course No. and Name	Credits
Soils 2 (Soils).....	4
Agronomy & Farm Mgt. 107 (Cereals and Corn).....	3
Animal Husbandry 3 (Market Classes of Livestock).....	3
Plant Pathology 1 (Plant Pathology).....	3
Agricultural Education 68 (Home and School Gardening).....	3
Agricultural Education 11 (Principles of Vocational Education).....	3
	<hr/> 19

SECOND SEMESTER

Course No. and Name	Credits
Agronomy & Farm Mgt. 110 (Forage, Root, Fibre & Potatoes)	3
Animal Husbandry 5 (Livestock Breeding)	2
Animal Husbandry 13 (Elements of Feeding).....	3
Dairy Husbandry 4 (Dairy Stock Judging)	1½
Veterinary Medicine 8 (Veterinary Studies)	3
Entomology 3 (Elements of Economic Entomology).....	3
Agricultural Education 21 (Vocational Education).....	3
	<hr/> 18½

*Students presenting a unit of high school Botany may omit first semester and substitute 3 elective credits later in the course.

†Students presenting a half unit of Higher Algebra may omit this and substitute 3 elective credits later in the course.

**Students presenting a unit of high school Physics may omit this and substitute 6 credits elective later in the course.

††Students presenting a unit of high school Mechanical Drawing may omit this and substitute 3 elective credits later in the course.

SENIOR YEAR—Required Subjects.

FIRST SEMESTER

Course No. and Name	Credits
Agricultural Education 31 (Methods of Teaching).....	3
Agronomy & Farm Mgt. 102 (Farm Management II).....	3
Plant Pathology 6 (Plant Pest Control)....	3
Poultry Husbandry 1 (Poultry).....	3
Farm Engineering 7 (Farm Structures)....	3
Electives.....	3
	<hr/> 18

SECOND SEMESTER

Course No. and Name	Credits
Agricultural Education 41 (Teaching).....	3
Agricultural Education 51 (Organization and Management).....	3
Plant Pathology 9 (Weeds and Seed Testing).....	3
Electives.....	3
	12

REQUIRED PROFESSIONAL COURSES.

(Arranged on the quarter basis.)

- I. Principles of Vocational Education.
- II. Vocational Education
(or, American School)
- III. Methods
- IV. Practice Teaching
- V. Organization and Management.*

*This course may be changed so as to use part of the time for a course in Educational Psychology.

BRIEF DESCRIPTION OF COURSES

AGRICULTURAL EDUCATION 11, PRINCIPLES OF VOCATIONAL EDUCATION. 3 quarter credits. The fundamental principles upon which education is based. Emphasis is placed on those phases which are most closely related to vocational education.

AGRICULTURAL EDUCATION 21, VOCATIONAL EDUCATION. 3 quarter credits. A short history of vocational education; the present status in Europe and the United States; manual training, and home arts in an educational system; the place of agriculture in the public schools with special reference to Minnesota.

Or,

EDUCATION 5, THE AMERICAN SCHOOL. 3 quarter credits. A brief survey of the factors determining the problem of public education in America, followed by a brief account of the development and organization of typical state school systems.

AGRICULTURAL EDUCATION 31, METHODS. 3 quarter credits.

- a. Technique of classroom instruction.
- b. Observation work (to initiate student into actual classroom routine).

- c. Special methods in teaching agriculture.
(This work is given in a room properly equipped for instruction in vocational agriculture. The students actually use and handle the equipment they will use when teaching in high school.)
- d. The home project as a method of instruction.

AGRICULTURAL EDUCATION 41, PRACTICE TEACHING. 6 quarter credits.

First Quarter—

- a. Observation
 - 1. To study activity of pupils.
 - 2. To study activity of teacher.
- b. Apprentice work.
 - 1. Help teacher with materials and lesson plans, copy on board, care for apparatus.
 - 2. Help make out questions for quiz, etc.
(Study the teacher's system of marking papers.)
 - 3. Help mark papers, and note books.
(Take care of makeup work.)
 - 4. Make out reports, etc.
 - 5. Help in demonstrations.
 - 6. Give instructions to individual students or to groups who have been absent or who are not doing good work.
 - 7. Study physical needs and conditions of room.
 - 8. **May** teach class in absence of regular teacher.
- c. Conference hours.
 - 1. Discussion of experiences and progress in observation work and apprentice teaching.
 - 2. Review of and discussion of assigned professional readings.
 - 3. Special study of teacher's personal equipment for teaching and school room technique, such as:
Personal qualities.
Social and professional ability.
Teaching technique.

School management (discipline, etc.)

Results.

(It is desirable that the student should acquire the proper professional attitude.)

Second Quarter.

- a. Actual charge of class under supervision.
A part of this teaching is to be done in a typical rural high school where vocational agriculture is being taught. (This work is to be under direct supervision of teacher training staff.)
- b. Conference, professional readings, etc., same as first quarter.
- c. Observation work.

AGRICULTURAL EDUCATION 51, ORGANIZATION AND MANAGEMENT. 6 quarter credits. Organization and management of work in secondary schools, particularly of Minnesota, with special reference to agricultural work, courses of study, programs, equipment, laboratory and class management, extension work, plots, and co-ordination of work.

AGRICULTURAL EDUCATION 68, HOME AND SCHOOL GARDENING. 3 quarter credits. Lecture and laboratory. A consideration of the elements of horticulture as applied to high school instruction, plant propagation, fruit-growing, home gardening, school gardening, and the planning of home and school grounds. (Same as Horticulture 94).

ELECTIVE PROFESSIONAL SUBJECTS

AGRICULTURAL EDUCATION 171, EXTENSION WORK. 3 quarter credits. Federal, state, and local extension aims, organization. Assembling and use of extension data and equipment. Development of extension methods, especially as applied to the work in Minnesota.

AGRICULTURAL EDUCATION 173, HISTORY OF AGRICULTURE. 3 quarter credits. A history of agricultural progress with special reference to the greater movements and to sources from which modern agriculture has received its most valuable acquisitions. Comparisons of our own agriculture with that of other countries.

AGRICULTURAL EDUCATION 175, VISUAL AND GRAPHIC PRESENTATION. 3 quarter credits. Designed to prepare persons for presenting materials by means of slides, films, charts, graphs, etc. Students assisted in assembling materials for their own use and in acquiring skill and technique in preparation and operation of various mediums.

AGRICULTURAL EDUCATION 191, SPECIAL PROBLEMS IN AGRICULTURAL EDUCATION. 3 quarter credits. For graduate students and seniors specializing in Agricultural Education. Critical studies of important problems in agricultural education; opportunity for individual investigation and research; review and interpretation of current educational literature.

AGRICULTURAL EDUCATION 195, ADMINISTRATION AND SUPERVISION OF VOCATIONAL AGRICULTURE. 3 quarter credits. A study of vocational agricultural education from the standpoint of the persons who are to act as administrators, supervisors, or teacher-trainers, under the Smith-Hughes Law.

Provisions for Observation and Practice Teaching

Students preparing to teach agriculture receive, first, a thorough training in the general problems of education which acquaint them with the fundamental principles underlying the learning and the teaching process. Second, they study the history, development, and literature of vocational agricultural education, which is followed by a study of the general and special methods of teaching vocational agriculture in secondary schools. This is followed by actual teaching under direct supervision. A study is made of the problems in organization and management of high school agricultural departments, and finally, the whole professional theory and practice work is summarized in the light of modern educational psychology.

The Department of Agricultural Education has an equipment similar to that which should be found in any high school. This is used in the professional courses, especially in Methods and Practice Teaching, so that the prospective

teacher may become thoroughly familiar with the various laboratory and classroom materials they will use in the high school.

Observation work and teaching experience are acquired in the University High School, the School of Agriculture, and in the high school departments of agriculture in the various towns of the state.

No person shall be graduated from this course without the completion, while in training, of one hundred forty-four hours of practical experience or contact with farming on a useful and productive basis, and this shall be in addition to the two years of practical experience required for admission.

Any person who has completed the course with a record of not less than one and one-half honor points per credit hour* in the fundamental technical courses and in all of the professional courses, and who has met all the requirements above mentioned and those laid down by the State Board for Vocational Education, and who is vouched for as a person of good moral character, sound health and special fitness for the work, shall be recommended to be entitled to receive from the State Department of Education a certificate authorizing him to teach agricultural subjects in any high school in this state.

*Each credit hour with a grade of A entitles recipient to 3 honor points.

Each credit hour with a grade of B entitles recipient to 2 honor points.

Each credit hour with a grade of C entitles recipient to 1 honor point.

Each credit hour with a grade of D entitles recipient to 0 honor points.

Training of Teachers in Service.

The following lines of work are proposed for the training of teachers in service under the direction of and in cooperation with the state supervisor of vocational agriculture. This work must be strictly instructional and designed to help keep the work of the departments up to high standards and to help to correct faults and to develop talents in the teacher, but is in no way inspectional in nature or intent.

- I. Follow-up work for one year after graduation with graduates from the University of Minnesota for the purpose of

aiding them to get properly started in their actual high school teaching.

- II. Visual instruction service of slides, films, charts, etc., to be loaned to men in service.

- III. Intensive Professional Training Course.
A two weeks' intensive professional and technical training course for men in service teaching vocational agriculture will be conducted during the summer quarter at the College of Agriculture.

3. TRADES AND INDUSTRIES.

- A. The University of Minnesota is designated for the training of teachers of trade and industrial subjects under plans approved by the State Board. The Supervisor of Trade and Industrial Education will assist during the present year as an itinerant training teacher, supervising short courses for the training of trade and industrial teachers in the large industrial centers.

Courses offered at the University of Minnesota

GENERAL INFORMATION

ORGANIZATION

The passage of the Smith-Hughes Bill in February, 1917, provided that each state in submitting its plan to the Federal Board for Vocational Education should make provision for the training of vocational teachers in Agriculture, Trades and Industries, and Home Economics.

The State Board for Vocational Education designated the University of Minnesota as the training center for the preparation of teachers of Vocational Education; and during the past year, 1918-19, the University has offered courses in Vocational Agriculture, Vocational Home Economics, and Trade Education. These courses have been offered in the regular sessions of the University, in the summer sessions, and in extension courses conducted at various centers.

The purpose of this bulletin is primarily to outline courses of study for the preparation of supervisors and teachers of trade and industrial subjects. For courses preparing teachers for conducting Vocational Agricultural and Home Economics classes, see the bulletin of the College of Agriculture.

AGENCIES COOPERATING WITH THE UNIVERSITY OF MINNESOTA

Within easy access to the University of Minnesota are various types of trade and industrial schools; as, unit industrial day schools for boys and girls, corporation schools, evening, part-time, general continuation classes, and correspondence schools. These schools and other institutions and state and city departments listed below are cooperating with the University in the preparation of trade teachers and in carrying on investigations in Vocational Education:

Bureau of Cooperative Research
City Civic and Commerce Association
Dunwoody Institute
Extension Department of the University
Federal School of Commercial Designing
Girls' Vocational High School
State Board for Vocational Education
State Department of Labor

OPPORTUNITIES FOR INVESTIGATIONS

The University has established two scholarships for advanced students in education who are qualified professionally, and have the vocational training necessary to carry on investigations in the field of Vocational Education. These scholarships pay \$225 each. Anyone interested may write to the Dean of the College of Education for particulars.

Graduate students in Education may choose as subjects of investigation in their seminar courses problems relating to Industrial Education; or they may take part in state and local surveys and investigations conducted by the University and the State Board for Vocational Education.

TYPES OF THE INDUSTRIAL SCHOOL

1. Unit trade schools for boys and girls in cities over 25,000
2. General industrial schools for boys and girls in cities less than 25,000
3. Part-time classes
 - a. Trade extension classes for boys or girls 14 years of age or over
 - b. Trade preparatory classes for boys and girls 14 years of age or over
 - c. General continuation classes for boys and girls 14 years of age or over
4. Evening trade classes for men and women.

KINDS OF TRADE AND INDUSTRIAL TEACHERS NEEDED

1. Supervisors and teachers of industrial schools
2. Teachers of shop subjects
3. Teachers of related subjects
4. Teachers of non-vocational subjects
5. Teachers in part-time classes.
6. Instructors in evening classes

SUPERVISORS AND TEACHERS OF INDUSTRIAL SCHOOLS: Schools and classes in industrial subjects are being established as fast as properly qualified teachers can be found. A four-year course is outlined under Courses of Study for Vocational Teachers. This course leads to the degree Bachelor of Science in Education and to a teacher's certificate in Vocational Education. In order that the industrial school may serve the ends for which it is organized, its teachers must have, besides the necessary trade experience, an understanding of educational theory and principles relating to industrial education and also a grasp of the industrial, economic, and social problems that have led up to the establishment of Vocational Education.

TEACHERS OF SHOP SUBJECTS: Shop teachers must be masters of their trades; they must possess a fair technical knowledge; and, in addition, they must have the ability to deal with mature people as well as with boys and girls. The course for shop teachers is outlined under Courses of Study.

TEACHERS OF RELATED SUBJECTS: Besides a two-year technical course, trade experience sufficient to enable them to make practical application of the subject matter to the various trades is required of all teachers of related subjects. A course for related subject teachers is outlined under Courses of Study.

TEACHERS OF NON-VOCATIONAL SUBJECTS: It is not required that teachers of history, general mathematics, English, general science, and civics in vocational classes possess other than their high school teacher's certificate, but it is well that they have at least a layman's knowledge of the trades that their pupils are studying. A short course for teachers of non-vocational subjects is outlined under Courses of Study.

TEACHERS IN PART-TIME CLASSES: Teachers of these classes should possess the qualifications necessary for teaching in a Junior High School. In addition to this, the teacher should have some natural mechanical ability and an interest in things industrial. The course of study outlined for non-vocational teachers is required for teachers of general continuation classes.

INSTRUCTORS IN EVENING SCHOOLS: The purpose of the evening industrial school is to give to the worker a further knowledge of his particular trade. The men and women conducting short unit courses in evening classes must have a thorough knowledge of their particular trade and also the ability to impart this knowledge to others.

CERTIFICATION OF VOCATIONAL TEACHERS

The State Board for Vocational Education has the authority for granting certificates to properly qualified teachers. The conditions upon which these certificates are granted are based on (a) trade experience, (b) educational qualifications, and (c) fitness for teaching. The educational qualifications are listed under the various courses of study for the training of teachers.

Teachers of evening classes or short-unit courses will be selected and certificated by the State Board for Vocational Education.

PLANS FOR TEACHER TRAINING

1. Professional courses at the regular session of the University of Minnesota: The courses of study are outlined in this bulletin.

2. Summer session courses: Courses covering six weeks' work outlined in the University summer session bulletin.

4. Extension courses at various centers in the state: During the year the University will establish training centers in the state wherever the demand for the courses justifies their establishment. Write to the College of Education or to the State Board for Vocational Education for a list of the training centers and the subjects offered.

During 1919 extension courses were offered at the following centers: Duluth, Minneapolis, St. Paul and Virginia.

5. Evening courses in Vocational Education will be offered in the cities where the demand for the courses warrants their establishment.

TRADE AND INDUSTRIAL TEACHER TRAINING

The State Board for Vocational Education has made certain requirements relative to the training of teachers of trade and industrial subjects and teachers of related subjects. For teachers of trade and related subjects in day and part-time schools, beginning with the school year 1919-20, at least 12 credits will be required for certification. From the subjects listed below Courses V25a, V49a, V37a, V73a, and V29a or V31a or V53a or V59a will be required.

Courses established.

During the 1919 summer session of the University, professional courses were offered for the training of teachers of trade and industrial subjects and teachers of related subjects. Day classes will be organized at the University during the academic year 1919-20, as listed below. Evening extension courses were organized during the year 1918-19 for the professional training of teachers in service. These extension courses will be conducted and supplemented with correspondence work offered through the Extension Division, University of Minnesota.

Courses open to.

These courses are open to both men and women who are expecting to qualify as teachers of trades or teachers of related technical subjects, to supervisors and principals who expect to establish courses in vocational education, and to teachers of related academic subjects.

1. Persons preparing themselves to be teachers of trade subjects must have had an adequate trade experience beyond the apprenticeship period in the trade or industry that they expect to teach.

2. Those preparing themselves to be teachers of related subjects must have had or must be acquiring a good technical education equivalent to two years beyond the four year high school course.

Credit

V25a	2	Organization and supervision of Vocational Education.
V27a	2	Industrial History
V29a	2	Shop Mathematics
V31a	2	Shop Science
V37a	2	Practice Teaching
V39a	2	Trade Psychology
V41a	2	Seminar in Vocational Education
V43a	2	Trade teaching in vocational schools for women and girls
V45a	2	Trade courses in certain units in shop work, sheet metal, automobile repairing, printing, carpentry, and electrical work.
V49a	3	Analysis and classification of trade knowledge.
V53a	2	Drawing for the building trades.
V59a	2	Drawing for the mechanical trades.
V61a	2	Educational and vocational guidance.
V63a	2	Methods of teaching commercial subjects in part-time classes.
V51a	2	Methods of establishing and conducting part-time schools and classes.
V65a	2	Teaching of related subjects
V67a	2	Retail Selling.
V69a	3	Textiles
V71a	3	Related Art
V73a	2	Methods of teaching trade subjects.

Description of Courses

V25a. ORGANIZATION AND SUPERVISION OF VOCATIONAL EDUCATION. This course is organized to meet the needs of persons who hold or expect to hold responsible positions in connection with the development of vocational education. Among them are school superintendents, high-school and grade-school principals, manual training and vocational teachers, members of school boards, shop workers, and members of labor organizations. Among the topics to be discussed are: the organization of vocational work under the Smith-Hughes Act; the State Board for Vocational Education and its relation to the local school boards; the organization of all-day, part-time, and evening trade and industrial schools and classes; the organization of vocational agricultural classes; and the organization of vocational home economics classes.

V27a. INDUSTRIAL HISTORY. A survey of the steps by which modern industries have been developed from their first forms in primitive times, with consideration of the social and economic effects of each change made. A study of the nature, significance, and results of labor under many conditions. The course closes with a brief review of labor history in Minnesota and a discussion of present day problems.

V29a. SHOP MATHEMATICS. The course is planned to meet the needs of the teachers of the various trade subjects. The course includes practical arithmetic together with those principles of algebra, geometry, and trigonometry that find application in the shop. Part of the work will be individual in that it will relate to the mathematics of the trade which the teacher is preparing to teach.

V31a. SHOP SCIENCE. The applications of the principles of science to concrete and practical problems in the trades and industries. The course will consist of frequent trips to local industrial establishments, assigned readings, and special reports. Special attention will be given to methods of teaching applied science.

- V37a. **PRACTICE TEACHING.** This course will provide the opportunity for the prospective teacher to teach under the supervision of a helpful critic. Arrangements will be made for the work to be carried out at the Girls' Vocational School and at Dunwoody Institute.
- V39a. **TRADE PSYCHOLOGY.** Study of the formation of habits; individual differences, their nature, extent and causes, and the part they play in acquisition of special trades.
- V41a. **SEMINAR—CURRENT PROBLEMS IN VOCATIONAL EDUCATION.** Members of the class will be expected to make critical studies of various phases of Vocational Education. These studies may be in the form of an analysis of the working program for the vocational school, outlining the course of study for certain subjects; or they may consist of making a survey of a community or district for the purpose of suggesting a vocational program.
- V43a. **TRADE TEACHING FOR WOMEN AND GIRLS.** The purpose of this course will be to give a survey of the principal positions open to women and girls in the professional, commercial, and industrial fields. This course will be of special value to those preparing to teach girls' vocational classes.
- V45a. **SHOP TRADE COURSES.** Technical trade courses offered at Dunwoody Institute, at the University of Minnesota, and at certain commercial plants, for which University credit will be given. Consult the director of Vocational Education for a list of subjects and a statement of conditions under which these courses may be taken.
- V49a. **ANALYSIS AND CLASSIFICATION OF TRADE KNOWLEDGE.** A course for men and women with trade experience who wish to prepare for the teaching of shop work in day, part-time, and evening schools. Among the subjects treated will be the analysis and classification of trade knowledge; how to outline lessons; methods of teaching; and the organization of teaching material. It is not intended in this course to take up subject mat-

ter, presupposing that those enrolled in the class have had sufficient trade experience to enable them to qualify as shop teachers.

V53a. **DRAWING FOR THE BUILDING TRADES.** The course will take up the methods of teaching drawing to learners and apprentices in the building trades. Emphasis will be placed on the reading of blue prints, making of shop sketches, and the planning of drafting-room work so that it will correlate with the various shop problems. Much of the time will be devoted to the outlining of lessons and the developing of courses of study for the various building trades.

V59a. **DRAWING FOR THE MECHANICAL TRADES.** This course will take up the methods of teaching drawing to those interested in the mechanical trades. The use of standard conventions will be emphasized; the reading of blue prints, making of shop sketches, and the outlining of courses of study for machine shop practice.

V61a. **VOCATIONAL AND EDUCATIONAL GUIDANCE.** The relation of vocational guidance to education and to employment, vocational surveys and their use, juvenile employments, methods of vocational guidance in various cities. Opportunities for supervised field work will be given to each member of the class.

V63a. **METHODS OF TEACHING COMMERCIAL SUBJECTS.** This course will take up the organization, supervision and subject-matter of the part-time commercial classes as conducted in our public schools and the method of organizing cooperative courses with business concerns. Among the topics discussed will be the form of contract with the business concern; the rotation of cooperative pupils in the various departments of the store and office; methods of making reports and the duties of the coordinator. Those enrolled for this course should have had teaching experience in commercial classes or be preparing to take up the teaching of commercial subjects, or have had practical commercial experience.

V51a. METHODS OF ESTABLISHING AND CONDUCTING PART-TIME SCHOOLS AND CLASSES.

This course consists of three distinct units, all of which must be taken to secure credit for the course. These three units are the industrial survey, vocational guidance and placement, and the organization of subject matter for part-time schools. The course is designed for public school teachers who are interested in the problem of the part-time school and are looking forward to a teaching position of this kind.

V69a. TEXTILES. A study of textile fibers, their structure, properties, and chemical reactions; of fabrics, their structure and processes of manufacture; of art and economic considerations in selection and purchase of materials for clothing and household furnishing.

V71a. RELATED ART. The object of this course is to show the close relationship between art and industry. Simple design and composition will be studied and practical application be made to manufactured articles.

V65a. TEACHING OF RELATED SUBJECTS. The purpose of this course is to meet the needs of teachers of related subjects, as science, mathematics, and drawing, who expect to teach these subjects. The organization of teaching units, related subject-matter, trade analysis, testing and checking results, discipline and records will be taken up in this course. Opportunities will be given to afford students to present and work out their own particular problems for immediate needs.

V67a. RETAIL SELLING. Among the general topics into which this course is divided are the following: store organization, merchandising, employment and labor conditions, teaching, business hygiene, and observation and practice work in stores. Those enrolled for this course should have had some retail selling experience and should be preparing to take up the work of organizing and conducting cooperative retail selling courses in connection with the public schools.

COURSES OF STUDY

A four-year course leading to the degree of Bachelor of Science in Education with a major in Vocational Education for the preparation of directors, supervisors, and teachers in trade and industrial schools is outlined below.

Requirements for graduation: (a) Completion of the following outlined course, (b) trade experience of at least one year beyond the apprenticeship period, the trade experience to have been gained previous to taking up the work or to be acquired during the time of taking the course.

FIRST YEAR

Department	Course No.	Course Title	Credit
Rhetoric	3 and 4	Composition and rhetoric.....	9
Mathematics	71a & 72	Algebra, trigonometry, and analytical geometry.....	15
Chemistry	29 and 30	General chemistry....	9
Engineering or	1 and 2	Mechanical drawing and descriptive geometry.....	9
Education	33 & 34	Free-hand drawing....	9
Economics	Ec 2	Industries & com'rce	4
Total.....			46

SECOND YEAR

Department	Course No.	Course Title	Credit
Mathematics or	73a & 74	Differential & integral calculus.....	15
Mathematics	90 & 92	Mechanics and strength of materials.....	12
Physics	1 and 2	General Physics.....	12
Engineering or	5 and 6	Graphics.....	6
Engineering	Arch. 43-44	Specifications and working drawings	9
Political Science	1a	American government.....	4
History or	5-6	American history.....	9
Elective.....			9
Total.....			46

THIRD YEAR

Department	Course No.	Course Title	Credit
*See note	V45a or V46b	Shop course depends on trade experi- ence.....	12
Education	1a	History of education	4
Engineering	V53a	Drawing for the building trades.....	3
or			
Engineering	V59a	Drawing for the me- chanical trades.....	3
Education	V31a	Shop Science.....	3
Education	V29a	Shop Mathematics....	3
Education	3a or 3b	Social aspects of edu- cation.....	4
Education	V27a	Industrial History....	3
Electives chosen from Group (b) below			12
Total.....			44

FOURTH YEAR

Department	Course No.	Course Title	Credit
*See note		Shop course depends on trade experi- ence.....	12
Education	V25a	Organization a n d supervision of vo- cational educat'n..	2
Education	V37a	Practice Teaching....	2
Education	11b	Technique of teach- ing.....	4
Education	V61a	Educational and Vo- cational Guidance	2
Education	V51a	Methods of estab- lishing and con- ducting part-time schools and classes	2
Education	V49a	Analysis and classifi- cation o f t r a d e knowledge.....	3
Electives chosen from group (b) below.....			19
Total.....			46

*Note. The shop courses should be selected from the same group in which the student has had his trade experience. Below are listed shop and technical courses for printers.

Department	Course No.	Course Title	Credit
Dunwoody Institute	Pr. 2	Job composition.....	3
Dunwoody Institute	Pr. 11	Linotype (mechanism & operat'n).....	4
Dunwoody Institute	Pr. 15	Make ready on a cylinder press.....	2
Dunwoody Institute	Pr. 16 & 17	Mixing colors and color-work for pressmen.....	3
Education	Art E31-32	Fundamental principles of design.....	9
Education	Art E33-34	Free-hand drawing and composition....	9
Journalism	16	Copy reading.....	4
Fed. School of Designing		Half tone work and zinc etching.....	4
Commercial Plants		Methods of embossing and engraving	3
Commercial Plants		Bookbinding.....	3

The shop work to be given at commercial plants can be arranged for on the half-day plan during the regular school year, or the work can be taken up during the summer vacations. Some of the shop courses are given in evening classes as well as in day classes.

Arrangements have been made for offering shop courses to the following:

Machinist	Sheet metal worker
Plumber	Cabinet maker
Steam fitter	Pattern maker
Carpenter	Interior decorator
Electrician	Power machine operator
Bricklayer	Textile machine operator
Plasterer	Dressmaker
Mechanical draftsman	Milliner
Architectural draftsman	Commercial designer
Painter	

Group (b). The electives chosen during the junior and senior years will depend somewhat on the trade experience of the students and on the courses taken the first two years.

Students should consult their advisers before selecting electives. The following are suggestive electives.

Department	Course No.	Course Title	Credit
Education	142	Industrial educat'n..	4
Education	105-106	Educational p s y - chology.....	9
Education	123-124	Supervision and ad- ministration.....	9
Education	119	School curricula.....	4
Education	V63a	Methods of teaching commercial s u b - jects.....	3
Department	Course No.	Course Title	Credit
Education	M.Tr. 1	Advanced drawing....	3
Education	M. Tr. 6	Advanced wood w'rk	3
Education	M.Tr.11a,b	Teaching and super- vision of manual training.....	4
History	155	American economic and social history..	4
History	144	History of Minne- sota.....	4
Rhetoric	11-12	Exposition, descrip- tion, a n d n a r - ration.....	9
Sociology	6	Social reform move- ments.....	4
Sociology	111-112	American people.....	9
Journalism	13-14	Reporting.....	9
Economics	161	Labor problems.....	4
Engineering	21	Building sanitation	3
Engineering	41	Elements of struc- ture.....	4

A SHORT COURSE OF STUDY OUTLINED FOR SHOP TEACHERS

Requirements: (a) A shop teacher shall possess at least an elementary education and also exceptional skill in the subject to be taught. He shall have completed during the year 1919-20 12 credits in Vocational Education chosen from the course outlined below.

Department	Course No.	Course Title	Credit
Education	V49a	Analysis and classi- fication of trade knowledge.....	3
Education	V25a	Organization a n d supervision of Vo- cational Educat'n	2

Education	V37a	Practice teaching.....	2
Education	V73a	Methods of teaching trade subjects	2
Education	V29a	Trade mathematics..	2
or			
Engineering	V53a	Drawing f o r t h e building trades.....	2
or			
Engineering	V59a	Drawing for the me- chanical trades.....	2
Education	V61a or V65a		2

A SHORT COURSE OF STUDY OUTLINED FOR
TEACHERS OF RELATED SUBJECTS

Requirements: (a) A teacher of related subjects shall present evidence of the satisfactory completion of a four-year high school course and at least a two-year technical course in the subjects to be taught, or in each case its equivalent; (b) He shall have had at least one year of shop experience or contact with the trades he proposes to teach and during the year 1919-20 shall have completed 12 or more credits in Vocational Education chosen from the courses outlined below.

Department	Course No.	Course Title	Credit
Education	V25a	Organization a n d supervision of vo- cational education	2
Education	V49a	Analysis and classi- fication of trade knowledge.....	3
Education	V73a	Methods of teaching trade subjects	2
or			
Education	V37a	Practice teaching.....	2
or			
Education	V29a	Shop Mathematics....	2
or			
Education	V31a	Shop Science.....	2
or			
Education	V61a	Educational and Vo- cational Guidance	2
or			
Engineering	V53a	Drawing f o r t h e building trades.....	2
or			
Engineering	V59a	Drawing f o r t h e mechanical trades	2

A SHORT COURSE OF STUDY OUTLINED FOR TEACHERS OF PART-TIME SCHOOLS OR CLASSES

Department	Course No.	Course Title	Credit
Education	V25a	Organization and supervision of Vocational Education	2
Education	V51a	Methods of establishing and conducting part-time schools and classes	2
Education	V61a	Educational and vocational guidance..	2
Education	V63a	Methods of teaching commercial subjects.....	2
Education	V73a	Methods of teaching trade subjects.....	2

Certification: The State Board for Vocational Education will issue certificates to teachers of shop and related subjects when they have completed the above requirements.

For courses offered at other times and places see statement of evening and extension classes.

A SHORT COURSE OF STUDY OUTLINED FOR TEACHERS OF NON-VOCATIONAL SUBJECTS

Under non-vocational subjects are included history, general mathematics, English, general science, and civics. In the all-day and part-time vocational classes the teachers of these subjects will be the regular high-school teachers of history, mathematics, English, and science. To do the teaching successfully the teachers must have at least a layman's knowledge of the machines used and the trades taught in the school. The following course is suggested for teachers of these subjects:

Department	Course No.	Course Title	Credit
Education	V27a	Industrial History....	2
Education	V29a	Shop Mathematics....	2
or			
Education	V31a	Shop Science.....	2
or			
Education	V61a	Educational and vocational guidance..	2

Education	V25a	Organization and supervision of vocational education	2
Education	V51a	Methods of establishing and conducting part-time schools and classes	2

COURSES FOR EVENING CLASS TEACHERS

Teachers of evening classes are, in most instances, to be trained in service. Teachers will be examined and certificated by the State Board for Vocational Education for the year 1919-20.

Home Economics Teacher Training.

COURSES

For the description of other courses mentioned in the outlined course of study see the bulletin of the department in which the subject is given.

4. Home Economics.

A. The University of Minnesota is designated for the training of teachers of home economics subjects.

B. Entrance requirements.

(a) The completion of a four year high school course or its equivalent, and

(b) Vocational experience or contact covering at least two years which must have been both practical and productive, or

(c) A total of one hundred forty-four hours of such actual experience or contact while in training.

C. Length of course.

(a) Four year.

(b) One hundred eighty-six hours.

D. Courses of study.

Teachers' course in Home Economics, The University of Minnesota.

FRESHMAN YEAR

GROUP A

Rhetoric 1, 2, 3,.....	9
Animal Biology.....	9
Chemistry.....	10
Freshman Lectures	
Phys. Ed. 11, Preliminary Hygiene	
Elementary Physical Training	

All students must register for Group A and enough additional work from Group B to make a total of not more than fifteen credit hours and not less than twelve credit hours each quarter. Courses in Group B not completed in the freshman year must be taken in the sophomore year, except as otherwise indicated.

GROUP B

Chemistry—Those students entering college without high school chemistry must take the 3 quarter course of 12 credits. Those presenting high school chemistry for entrance should register for the two quarter course.

Farm Eng.....	5
H. E. 3 Textiles.....	5
H. E. 51 Drawing and Design.....	3
H. E. 11 Garment Making.....	3

SOPHOMORE YEAR

H. E. 21 Foods and Cookery.....	5
H. E. 22 Food Economics	5
Physiol. 3 Human Physiology.....	5
Sociol. 1 General Sociology.....	3
Agr. Biochem. 3 Carbon Compounds.....	5
Argumentation 11.....	5
Public Speaking 22.....	5
Elementary Bacteriology 1.....	4
Psychology 3.....	5
Dressmaking 13.....	5

JUNIOR YEAR

H. E. 107, 108 Nutrition.....	10
H. E. 37 Home Care of the sick.....	3
Agr. Edu. 11 Principles of Vocational Education.....	3
Educ. 5 The American School.....	3
Econ. 3 Principles of Education	5
H. E. 52 Art History and Appreciation.....	3
H. E. 53 Advanced Design.....	3
H. E. 42 Special Methods in Home Economics.....	5
Electives.....	8

SENIOR YEAR

H. E. 103 Dietetics.....	5
H. E. 32 Home Management: House Planning and Equipment.....	5
H. E. 49 Observation and Teaching.....	8

H. E. 103 Clothing Economics.....	3
H. E. 17 Advanced Clothing Construction....	3
H. E. 34 Home Management: Operation and Maintenance, Lectures.....	3
H. E. 40 Child Training.....	3
H. E. 35 Home Management, Laboratory, Operation and Maintenance.....	5
Electives.....	18
Percentage distribution of hours:	
Home Economics subjects.....	29.8%
Related subjects.....	28.3%
Professional subjects.....	14.7%
Non-vocational and elective.....	27.2%

E. Observation and practice teaching.

- a. Provision for observation and supervised teaching is made in the School of Agriculture, University Farm, St. Paul, and the University High School, Minneapolis, whereby students preparing to teach home economics shall have actual experience under supervision in the teaching of home economics subjects.
- b. Each student is expected to teach six hours a week for a period of twelve weeks.

F. Supervised Household Management.

- a. Provision for supervised household management is made whereby students may have actual experience in the management of a household.
- b. There are two houses for this purpose, and each student spends twelve weeks of the senior year or the latter part of the junior year in the house.

G. Graduation shall be based upon the successful completion of the required course, evidence of teaching ability, good health, good character, successful practical experience.

H. Persons who have completed the above course of study, who have met the requirements as to vocational experience and contact, and who have the endorsement of the head of the teacher training

department shall be entitled to a certificate from the State Department of Education authorizing them to teach home economics subjects in any state high school.

5. Related Art.

A. The University of Minnesota is designated for the training of teachers of related art.

B. Entrance requirements.

(a) The completion of a four year high school course or its equivalent, and

(b) Vocational experience or contact covering at least two years which must have been both practical and productive, or

(c) A total of one hundred forty-four hours of such actual experience or contact while in training.

C. Length of course.

(a) Four years.

(b) One hundred eighty-six unit hours.

D. Course of study.

FRESHMAN YEAR

GROUP A

Rhetoric 1, 2, 3.....	9
Animal Biology.....	9
Chemistry.....	10

Freshman Lectures.

Phys. Ed. 11, Preliminary Hygiene.

Elementary Physical Training.

All students must register for Group A and enough additional work from Group B to make a total of not more than fifteen credit hours and not less than twelve credit hours each quarter. Courses in Group B not completed in the freshman year must be taken in the sophomore year, except as otherwise indicated.

GROUP B

Chemistry—Those students entering college without high school chemistry must take the 3 quarter course of 12 credits. Those presenting high school chemistry for entrance should register for the two year course.

Farm Eng.....	5
H. E. 3 Textiles.....	5
H. E. 51 Drawing and Design.....	3
H. E. 11 Garment Making.....	3

SOPHOMORE YEAR

H. E. 21 Foods and Cookery.....	5
H. E. 22 Food Economics.....	5
Physiol. 3 Human Phys.....	5
Sociol. 1 General Sociol.....	3
Agr. Biochem. 3 Carbon Compounds.....	5
Argumentation 11.....	5
Public Speaking 22.....	5
Elementary Bacteriology 1.....	4
Psychology 3.....	5
Dressmaking 13.....	5

JUNIOR YEAR

Art. Ed. 33, 34 Beginning Freehand Drawing	3
Art. Ed. 34 Advanced Freehand Drawing....	3
H. E. 52 Art History and Appreciation.....	3
H. E. 53 Advanced Design.....	3
H. E. 55 Decorative Needlework and other crafts.....	2
H. E. 57 Weaving and other crafts.....	2
H. E. 17 Advanced Clothing Construction.....	3
H. E. 123 Clothing Economics.....	3
Econ. 3 Principles of Economics.....	
H. E. 33 Home Care of the sick.....	3
Ag. Ed. Elementary Educational Psychology	
H. E. 42 Home Economics Education.....	5
Ed. 5-The American School.....	3
Electives.....	8

SENIOR YEAR

H. E. 32 Home Equipment.....	5
Art. Ed. 40 Principles of Form and Color.....	3
H. E. 58 Costume Design.....	3
H. E. 54 Interior Design.....	3
H. E. 43 Organization and Methods for Re- lated Art Teaching.....	3
H. E. 18 Commercial clothing manufacture..	4
H. E. 48 Observation and Teaching.....	8
H. E. 19 Millinery.....	2
H. E. 4 Advanced Textiles.....	3
Electives.....	12

E. Observation and practice teaching.

- (a) Provision for observation and supervised teaching in related art is made in the School of Agriculture, University Farm, St. Paul, whereby students preparing to teach related art shall have actual experience under supervision in the teaching of related art subjects.
- (b) Each student is expected to teach six hours a week for a period of twelve weeks.

F. Graduation shall be based on the successful completion of the required course, evidence of teaching ability, good health, good character and successful practical experience.

G. Persons who have completed the above course of study, who have met the requirements as to vocational experience and contact, and who have the endorsement of the head of the teacher training department shall be entitled to a certificate from the State Department of Education authorizing them to teach related art subjects.

H. Supervised special problems.

- (a) Planning and executing designs for interiors in the neighborhood.
- (b) Planning color schemes and designs for patrons in course in Commercial Clothing Manufacture.

The following attached bulletins list the teacher training courses offered during the summer session of the University of Minnesota, June 23 to August 2, 1919, and similar courses will be offered during the summer session, June 25 to August 2, 1920.

PROGRAM

TWO WEEKS' INTENSIVE TRAINING COURSE FOR VOCATIONAL AGRICULTURAL INSTRUCTORS.

July 21-August 1, 1919.

FIRST WEEK

HOUR	MONDAY 21st	TUESDAY 22nd	WEDNESDAY 23rd	THURSDAY 24th	FRIDAY 25th	SATURDAY 26th
8:00-8:50		Rural Sociology Lundquist	Rural Sociology Lundquist	Rural Sociology Lundquist	Rural Sociology Lundquist	Rural Sociology Lundquist
9:00-9:50		Methods Field	Methods Field	Methods Field	Methods Field	Judging Contests Fudge
10:00-10:50		Plant Diseases Stakman	Entomology Riley	Address Holmberg	Address Sullivan	Principles of Feeding Peters

HOUR	MONDAY 21st	TUESDAY 22nd	WEDNESDAY 23rd	THURSDAY 24th	FRIDAY 25th	SATURDAY 26th
11:00-12:00		Farm Machinery Bassett	Farm Machinery Bassett	Farm Machinery Bassett	Farm Machinery Bassett	Swine Vaughn
1:30-2:30	Opening Address Thatcher	Horses Gay	Dairy Cattle Eckles	Dairy Cattle Eckles	Beef Cattle Peters	
2:30-3:00	Conference Coffman	Conference Carris, McGarvey	Conference McIntosh McConnell	Conference McIntosh	Conference Phillips, Linke	
7:30		Motion Picture Demonstration Ankeney				

HOUR	MONDAY 28th	TUESDAY 29th	WEDNESDAY 30th	THURSDAY 31st	FRIDAY 1st
8:00-8:50	Methods Field	Methods Field	Methods Dyer	Methods Ankeney	Methods Ankeney
9:00-9:50	Minnesota Creameries McGuire	Farm Management Boss	Bees Jager	Problems in Horticulture Brierley	Address Wilson
10:00-10:50	Library or Lecture	Address Munroe	Library or Lecture	Library or Lecture	
11:00-12:00	Farm Machinery Bassett	Farm Machinery Bassett	Farm Machinery Bassett	Farm Machinery Bassett	Animal Diseases Fitch

PROGRAM—Continued

SECOND WEEK

HOUR	MONDAY 28th	TUESDAY 29th	WEDNESDAY 30th	THURSDAY 31st	FRIDAY 1st
1:30-2:30	Sheep Anderson	Problems in Breeding Gay	Poultry Judging Smith	Poultry Judging Smith	Address Mayne
2:30-4:00	Field Trip Army	Conference	Conference Hummel	Conference Hummel	Conference Gile
4:00-6:00				Field Trip Hayes	
7:30		Motion Picture Demonstration Ankeney			

COURSES IN VOCATIONAL EDUCATION SUMMER SESSION, 1919

ANNOUNCEMENT

There will be offered during the Summer Session of the University of Minnesota (June 23 to August 2) courses in vocational education that should be of special interest to men and women who are either supervising or teaching classes in vocational education or who expect to teach in vocational departments of the public schools the coming year.

COURSES OPEN TO WHOM

Certain general courses listed in the bulletin are for superintendents, principals, and teachers who expect to have under their supervision some form of vocational education.

Specific methods courses are outlined for the following groups of teachers: teachers of shop subjects; teachers of related technical subjects, as drawing, mathematics, and science; teachers of non-vocational subjects; teachers of part-time schools and classes which include the regular shop and related subjects; teachers of commercial subjects and merchandising.

COMBINATION WITH SHOP COURSES

It will be possible during the Summer Session for students to arrange for courses in shop subjects and classroom subjects. Certain shop courses will be offered at the College of Engineering and Dunwoody Institute. Consult with the instructors in charge of vocational work in regard to this arrangement.

FEDERAL BOARD REPRESENTATIVES

Representatives from the Federal Board for Vocational Education will assist the regular instructors in offering the courses in Organization and Supervision of Vocational Education. Members of the Board who are specialists in their particular fields of vocational education will each spend a week at the University during the Summer Session.

REGISTRATION AND FEES

Saturday, June 21, and Monday, June 23, are regular registration days. Students may register on any preceding day. Students should

complete registration and be ready for class work before 8 a. m., Tuesday, June 24. After Monday, June 23, students may register by special permission. No student will be permitted to register after Monday, June 30. To complete registration, fees must be paid the same day.

Students are required to pay fees as follows:

Registration fee.....	\$5.00
Tuition fee per credit hour.....	2.00
Additional fee for each laboratory course	1.50
Deposit fee.....	5.00
Health fee.....	1.00

Every student will be required to pay at least \$10, including the registration fee of \$5. The unused balance of the deposit fee will be returned at the close of the Summer Session.

Students registering in vocational education should secure their registration blanks in the entrance lobby of the library building.

CREDIT

A course that recites six hours a week for six weeks will carry three quarter credits.

In all shop courses a double period counts as one hour.

All the courses offered are of college grade and carry university credit and are the same as courses offered in residence and at extension centers during the regular college year. Students meeting the entrance requirements of the College of Education will be given credit in that College for the work completed during the Summer Session.

CERTIFICATION OF VOCATIONAL TEACHERS

The State Board for Vocational Education has the authority for granting certificates to properly qualified vocational teachers. Credit will be given toward teacher's certificates for work done during the Summer Session. Consult the instructors in charge of vocational courses in regard to necessary qualifications of vocational teachers.

DAILY PROGRAM

The hour schedule will be as follows:

I	8:30- 9:20	VI	2:30-3:20
II	9:30-10:20	VII	3:30-4:20
III	10:30-11:20	VIII	4:30-5:20
IV	11:30-12:20	IX	7:30-8:20
V	1:30- 2:20	X	8:30-9:20

To accommodate shop men and others who cannot attend the regular day sessions certain courses are offered at the IX and X hours.

VOCATIONAL EDUCATION

Assistant Professor ARTHUR F. PAYNE; Instructors KATHERINE F. BALL, JOHN O. CEDERBERG, Jr., JAMES C. REED. The following lecturers are from the staff of the Federal Board for Vocational Education, KENNETH G. SMITH, MRS. ANNA BURDICK, LEWIS H. CARRIS, ADELAIDE STEELE BAYLOR, F. G. NICHOLS; the following are from the State Board for Vocational Education, MILDRED WEIGLEY, BUEFORD M. GILE, GEORGE A. MCGARVEY.

COURSES

No.	Quarter Credits	Title	Room
V25su Sec. I	2	Organization and Supervision of Vocational Education..... VIII	111Ed MTWTh
*V25su Sec. II	2	Organization and Supervision of Vocational Education..... IX-X	111Ed MT
V49su Sec. I	3	Methods of Analysing and Classifying Trade Knowledge.. V	102Ed MTWThFS
*V49su Sec. II	3	Methods of Analysing and Classifying Trade Knowledge.. IX-X	102Ed MWF
V53su	2	Drawing for the Building Trades..... I-II	ME TWThF
V61su	2	Vocational and Educational Guidance, III	111Ed TWThF
V51su	2	Methods of Establishing and Conducting Part-Time Schools and Classes, VII	111Ed MTWTh

COURSES

No.	Quarter Credits	Title	Room
V63su	2	Methods of Teaching Commercial Subjects..... II	111Ed TWThF
V65su	2	Teaching of Related Subjects..... II	Ar TWThF
V67su	2	Retail Selling..... IV	206Ed TWThF
V45su	Trade Courses. Special Units in Machine Shop, Sheet Metal, Automobile Repairing, Printing, Carpentry, Electrical Work.	

*Course will be given if enrollment is large enough.

DESCRIPTION OF COURSES

V25su. Sec. 1. ORGANIZATION AND SUPERVISION OF VOCATIONAL EDUCATION. This course is organized to meet the needs of persons who hold or expect to hold responsible positions in connection with the development of vocational education. Among them are school superintendents, high-school and graded-school principals, manual training and vocational teachers, members of school boards, shop workers, and members of labor organizations. Among the topics to be discussed are: the organization of vocational work under the Smith-Hughes Act; the State Board for Vocational Education and its relation to the local school boards; the organization of all-day, part-time, and evening trade and industrial schools and classes; the organization of vocational agriculture classes; and the organization of vocational home economics classes. The course will be conducted by specialists from the Federal and State Boards for Vocational Education.

V25su. Sec. II, IX and X, Monday and Tuesday. ORGANIZATION AND SUPERVISION OF VOCATIONAL EDUCATION. (For description of course see above.)

V49su. Sec. I. METHODS OF ANALYSING AND CLASSIFYING TRADE KNOWLEDGE. A course for men and women with trade experience who wish to prepare for the teaching of shop work in day, part-time, and evening schools. Among the subjects treated will be the analysis and classification of trade knowledge; how to outline lessons; methods of teaching; and the organization of teaching material. It is not intended in this course to take up subject matter, presupposing that those enrolled in the class have had sufficient trade experience to enable them to qualify as shop teachers.

V49su. Sec. II, IX and X. Monday, Wednesday, and Friday. METHODS OF ANALYSING AND CLASSIFYING TRADE KNOWLEDGE. (For description of course see above.)

V53su. DRAWING FOR THE BUILDING TRADES.

The course will take up the methods of teaching drawing to learners and apprentices in the building trades. Emphasis will be placed on the reading of blue prints, making of shop sketches, and the planning of drafting-room work so that it will correlate with the various shop problems. Much of the time will be devoted to the outlining of lessons and the developing of courses of study for the various building trades.

V61su. VOCATIONAL AND EDUCATIONAL GUIDANCE. The relation of vocational guidance to education and to employment, vocational surveys and their use, juvenile employments, methods of vocational guidance in various cities. Opportunities for supervised field work will be given to each member of the class.

V51su. METHODS OF ESTABLISHING AND CONDUCTING PART-TIME SCHOOLS AND CLASSES. This course consists of three distinct units all of which must be taken to secure credit for the course. These three units are the industrial survey, vocational guidance and placement, and the organization of subject matter for part-time schools. The course is designed for public school teachers who are interested in the problem of the part-time school and are looking forward to a teaching position of this kind.

V63su. METHODS OF TEACHING COMMERCIAL SUBJECTS. This course will take up the organization, supervision, and subject-matter of the part-time commercial classes as conducted in our public schools and the method of organizing cooperative courses with business concerns. Among the topics discussed will be the form of contract with the business concern; the rotation of cooperative pupils in the various departments of the store and office; methods of making reports; and the duties of the coordinator. Those enrolled for this course should have had teaching experience in commercial classes, or be preparing to take up the teaching of commercial subjects, or have had practical commercial experience.

V65su. **TEACHING OF RELATED SUBJECTS.** The purpose of this course is to meet the needs of teachers of related subjects, as science, mathematics and drawing, who expect to teach these subjects. The organization of teaching units, related subject-matter, trade analysis, testing and checking results, discipline and records will be taken up in this course. Opportunities will be given to afford students to present and work out their own particular problems for immediate needs.

V67su. **RETAIL SELLING.** Among the general topics into which this course is divided are the following: store organization, merchandising, employment and labor conditions, teaching, business hygiene, and observation and practice work in stores. Those enrolled for this course should have had some retail selling experience and should be preparing to take up the work of organizing and conducting cooperative retail selling courses in connection with the public schools.

V45su. **TRADE COURSES. SPECIAL UNITS IN MACHINE SHOP, SHEET METAL, AUTOMOBILE REPAIRING, PRINTING, CARPENTRY, AND ELECTRICAL WORK.** Certain unit courses in machine shop practice may be taken at the College of Engineering of the University and at Dunwoody Institute, by teachers of shop subjects who wish to improve themselves in their particular trades. The hours will be arranged with instructors. Two hours of shop work will count as one hour of classroom work.

PROPOSED SUMMER SESSION TEACHER TRAINING COURSES

3. **Textiles.** A study of textile fibers, their structure, properties, and chemical reactions; of fabrics, their structure and processes of manufacture; of art and economic considerations in selection and purchase of materials for clothing and household furnishing.
PHELPS.
11. **Garment Making.** Instruction and laboratory practice in hand sewing; reading and adaptation of commercial patterns; construc-

- tion and use of the sewing machine; designing, cutting, and making simple outer garments from washable materials. McDOWELL.
13. Dressmaking. Consideration of quality, suitability, and cost of materials adapted to technique involved in construction of simple wool and silk dresses; adaptation of art principles in selection of designs; instruction and practice in methods of construction.
17. Advanced Clothing Construction. Laboratory problems in costume modeling and construction. WELLER, PATCHIN.
18. Commercial Clothing Manufacture. A study of the organizations of the clothing trades and industries; of wages and standards of efficiency in workmanship. Laboratory practice upon a commercial basis, measured by trade standards. PATCHIN.
19. Millinery. A study of the processes and materials used in millinery; designing, making and trimming hats. BROWN.
21. Foods and Cookery. (a) Production, manufacture, chemical composition of typical foods; their classification into food principles; changes in digestion; function in nutrition. (b) Fundamental science principles from chemistry, physics, biology, bacteriology, and their application in typical processes. STINSON.
22. Food Economics. Cost and nutritive value of typical foods; the study of dietaries; preparation and serving of meals, the cost bearing a definite relation to the family budget. STINSON.
25. Special problems in Foods and Cookery. An advanced course in food preparation in which the problems are undertaken from an experimental point of view. WEIGLEY, STINSON.
35. Home Management; Operation and Maintenance, Lectures. The family budget for varying incomes, and for the "Home Management House;" household accounts. LINDQUIST.

37. Home Care of the Sick. (a) First aid; communicable diseases; their transmission and prevention; hygiene of infancy, maidenhood, maturity. (b) The care of the sick room; observation and care of the patient; elementary symptomatology. FISHER.
42. Home Economics Education. Curricula, equipment, methods of teaching for Home Economics. WEIGLEY.
43. Organization and Methods for Related Art Teaching. Organization of a related art course and methods of teaching art principles as applied to familiar objects and processes. H. GOLDSTEIN.
51. Drawing and Design. Composition, perspective, color theory, and color harmonies applied to costume design and interiors; harmony, balance, rhythm, in line and area design. V. GOLDSTEIN.
52. Art History and Appreciation. The historical development of art, architecture, decoration, furniture, and costume studied with special emphasis on design and influence upon modern styles. H. GOLDSTEIN. V. GOLDSTEIN.
53. Advanced Design. Problems in design for costume and for house furnishing. H. GOLDSTEIN, V. GOLDSTEIN.
61. Large Quantity Cookery and Marketing. Preparation of food in large amounts such as required in cafeteria and dining hall service; calculation of cost of individual servings; consideration of the problems involved and methods employed in purchasing of supplies. RICHARDS.
63. Institutional Experience I. Actual experience in the cafeteria and dining hall under direction. TREAT.
103. Dietetics. The fundamental principles of human nutrition as applied to the feeding of individuals and groups under conditions of health, and under such pathological conditions as are chiefly dependent upon dietetic treatment. BIESTER.

107. Nutrition I. A study of the chemistry and physiology of metabolism, involving a qualitative examination of the organic food stuffs and of the body tissues. BIESTER.
122. Advanced textiles. A more intensive study of textile fibers and fabrics, organization of laboratory problems leading to the establishment of a basis for standardization by the general consumer and for a demand for pure textiles. WELLER.
123. Clothing Economics. General consideration of economic function of women with reference to clothing and textiles in the home and in industry; study of clothing budget, hygiene and standardization of dress. WELLER.

INDEX

I. Administration and Supervision.	Page
1. General administration.....	5
2. Supervision of Agriculture.....	5
3. Supervision of Trades and Industries	5
4. Supervision of Home Economics.....	6
5. Supervision of Teacher Training.....	6
Qualifications of Supervisors.....	6
Teacher Training by Supervisors.....	6
II. General conditions for receiving Federal Aid.....	7
III. Agricultural Education.	
1. Kinds of schools.....	7
A. State Schools of Agriculture.....	7
B. State High Schools.....	8
C. Part-time Schools or Classes.....	8
D. Evening Instruction.....	9
2. Plant and Equipment.....	10
3. Minimum for Maintenance.....	11
4. Course of Study.....	11
5. Methods of Instruction.....	12
6. Qualifications of Teachers.....	12
7. Qualifications of Supervisors of Agriculture.....	13
8. Six months' practical work.....	13
Project work.....	14
9. Division of Federal Funds for Instruction in Agriculture.....	16
IV. Trade, Home Economics and Industrial Education.	
1. Tentative budget of Federal Funds....	17
2. Trade and Industrial Education.....	17
A. Kinds of Trade and Industrial Education to be maintained.....	17
B. Evening Industrial Schools or Classes.....	18
C. Part-time Schools or Classes.....	21
a. Trade Extension.....	21
b. Trade Preparatory.....	24
c. General Continuation.....	24
D. Day Unit Trade Schools.....	27
Qualifications of Trade and Industrial Teachers.....	29
E. General Industrial Schools for cities and towns of less than 25,000 population.....	31

3. Home Economics Education.....	33
A. Kinds of Schools.....	33
B. Evening Schools and Classes.....	33
C. Part-time Schools and Classes.....	35
D. Day Schools in Cities.....	37

TYPE COURSES IN AGRICULTURE

1. Two year course.....	40
2. Three year course.....	40
3. Four year course.....	41

TYPE COURSES IN TRADE AND INDUSTRIAL EDUCATION

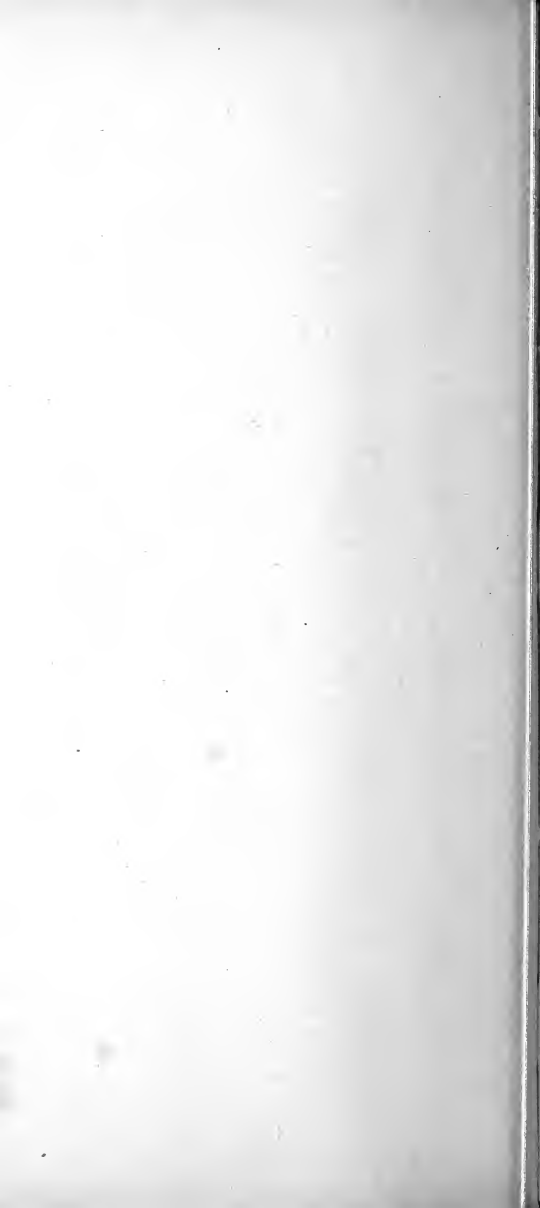
1. Evening Industrial Schools or Classes.....	43
2. Part-time Schools or Classes.....	44
A. Trade Extension.....	44
B. Trade Preparatory.....	45
C. General Continuation.....	45
3. Day Unit Trade Schools.....	46
4. General Industrial Schools for cities and towns of less than 25,000 popula- tion.....	47

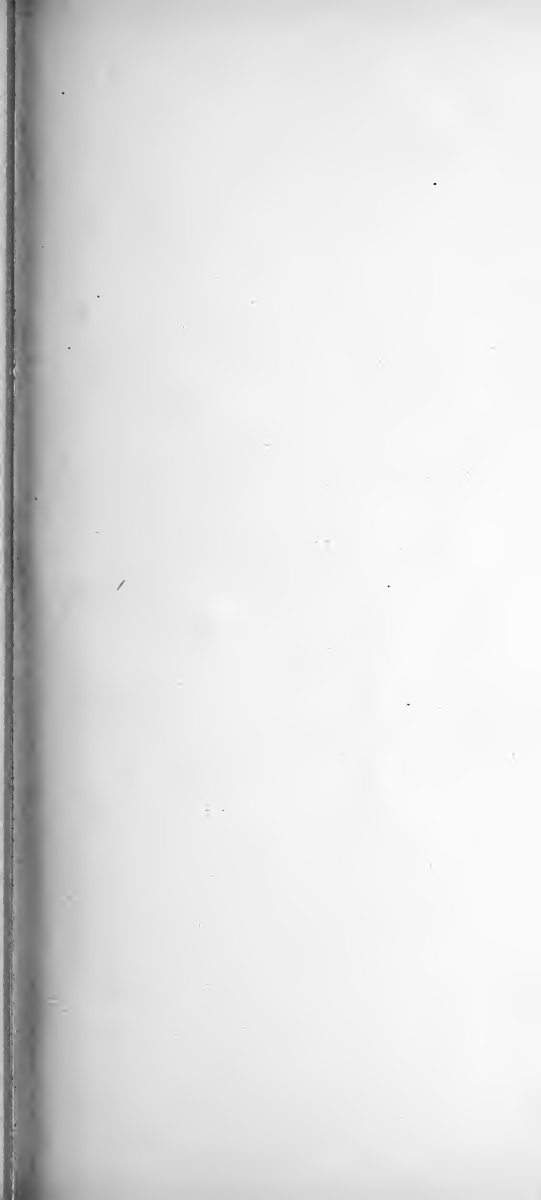
TYPE COURSES IN HOME ECONOMICS

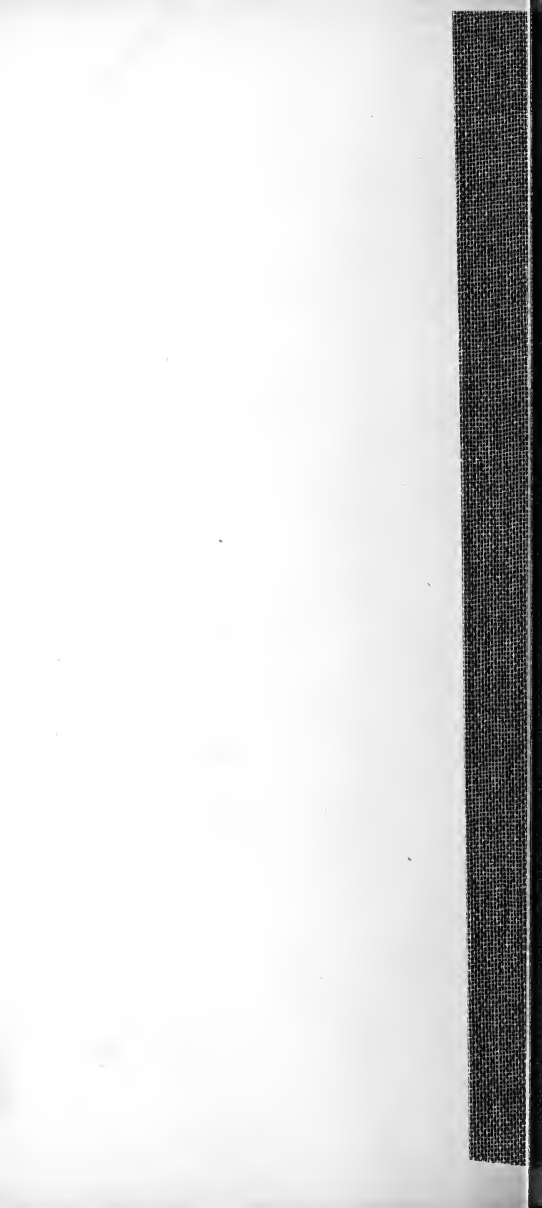
1. Type course No. 1.....	47
2. Type course No. 2.....	48
3. Type course No. 3.....	49
4. Type course No. 4.....	51
5. Type course No. 5.....	52
6. Type course No. 6.....	53
Suggested Four Year Course in Voca- tional Home Economics.....	55

V. Teacher Training.

1. Tentative budget for use of Federal Funds.....	56
2. Agricultural Teachers.....	57
3. Trade and Industrial Teachers.....	71
4. Home Economics Teachers.....	83
Two weeks intensive training course for Vocational Agricultural Instruc- tors.....	89
Courses in Vocational Education, Summer Session 1919.....	93
1. Description of Courses.....	98
Proposed summer session Teacher Training courses in Home Eco- nomics	100







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